FM 5055B LOT #3

C-02133

p. 188

FINGERPRINT TEST DATA REPORT

NAS8-36298 COPY # 21

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FILLER TESTING

NAS8-36298

U.S. Polymeric O.E. 71108

Filler Lot for NASA Lot# 3

CHARTS

U.S. Polymeric

FILLER TESTING

NAS8-36298

U.S. POLYMERIC O.E. 71108

Filler Lot for NASA Lot# 3

		SAMPLE			
1. Carbon Content, % QAI-5560		#3A-1	#3A-2	#3A-3	
		99.40	99.32	99.44	
	NASA LOT# 3 AVERAGE			99.39	
2. Ash Content, % PTM-71B		0.000	0.000	0.000	
		0.000	0.000	0.005	
	AVG.	0.000	0.000	0.002	
	NASA LOT# 3 AVERAGE			0.001	
3. Atomic Absorption, ppm CTM-53B (Values are average of 2 determinations)		#3A-1	#3A-2	#3A-3	LOT#3 AVG.
	Na	6.0	6.0	6.0	6.0
	K	2.5	1.0	2.0	1.8
	Ca	2.5	2.5	2.0	2.3
	Mg	0.0	0.0	0.0	0.0
	Li	0.0	0.0	0.0	0.0
	TOTAL	11.0	9.5	10.0	10.2
3a. Moisture Content, % CTM-53B		.010	.015	0.000	
		.005	.020	0.000	
	AVG.	.008	.018	0.000	
	NASA LOT# 3 AVERAGE			.008	
3b. Ash Content, % CTM-53B		.025	.000	.000	
		.025	.010	.000	
	AVG.	.025	.005	.000	
	NASA LOT# 3 AVERAGE			.010	
4. pH, Units ASTM D1512		4.80	4.75	4.85	
		4.95	4.80	4.80	
	AVG.	4.88	4.78	4.82	
	NASA LOT# 3 AVERAGE			4.83	
5. Particle Size, microns S.E.M. procedure (Average values are of 20 determinations)	AVG.	.51	.51	.42	
	Maximum	.99	.88	.85	
	Minimum	.20	.18	.15	
	Std. Dev	.23	.20	.17	
	NASA LOT# 3 AVERAGE SIZE			.48	
6a. TGA, °C at 50% Loss CTM-51		864	860	850	
	NASA LOT# 3 AVERAGE			858	

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Filler Lot for NASA Lot# 3

6b. TGA
CTM-51

See Charts 6A-6C

7. Particle Size Distribution
CTM-72

See Charts 7A-7C

7a. Particle Size, microns
CTM-72

	#3A-1	#3A-2	#3A-3
	.89	.94	.89
	.94	.83	.86
AVG.	.92	.88	.88

NASA LOT# 3 AVERAGE .89

U.S. Polymeric

Hamid M. Quraishi

Hamid M. Quraishi, Manager
Quality Assurance Department

CHART 6A

ORIGINAL PAGE IS
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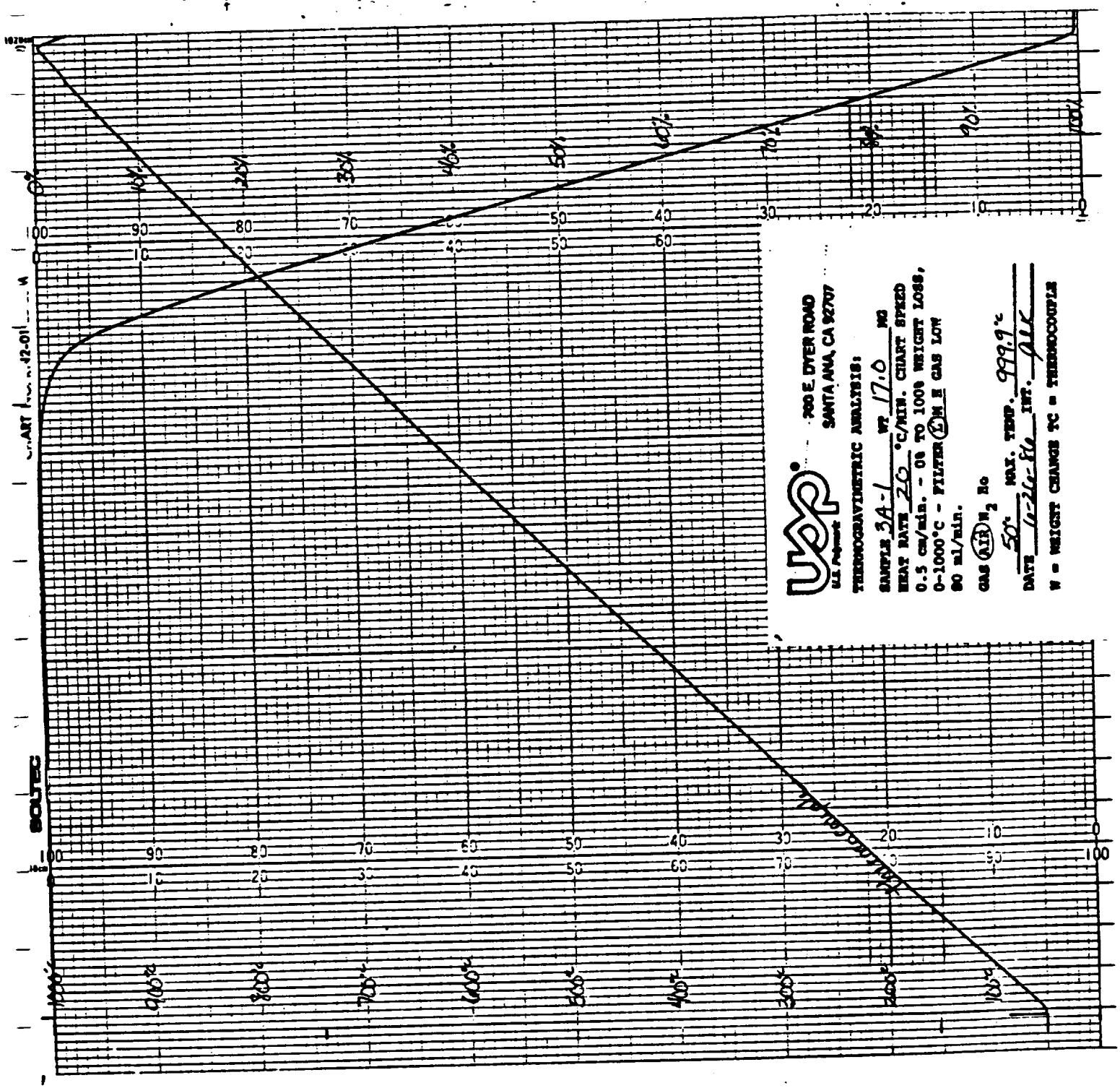

CHART 6B

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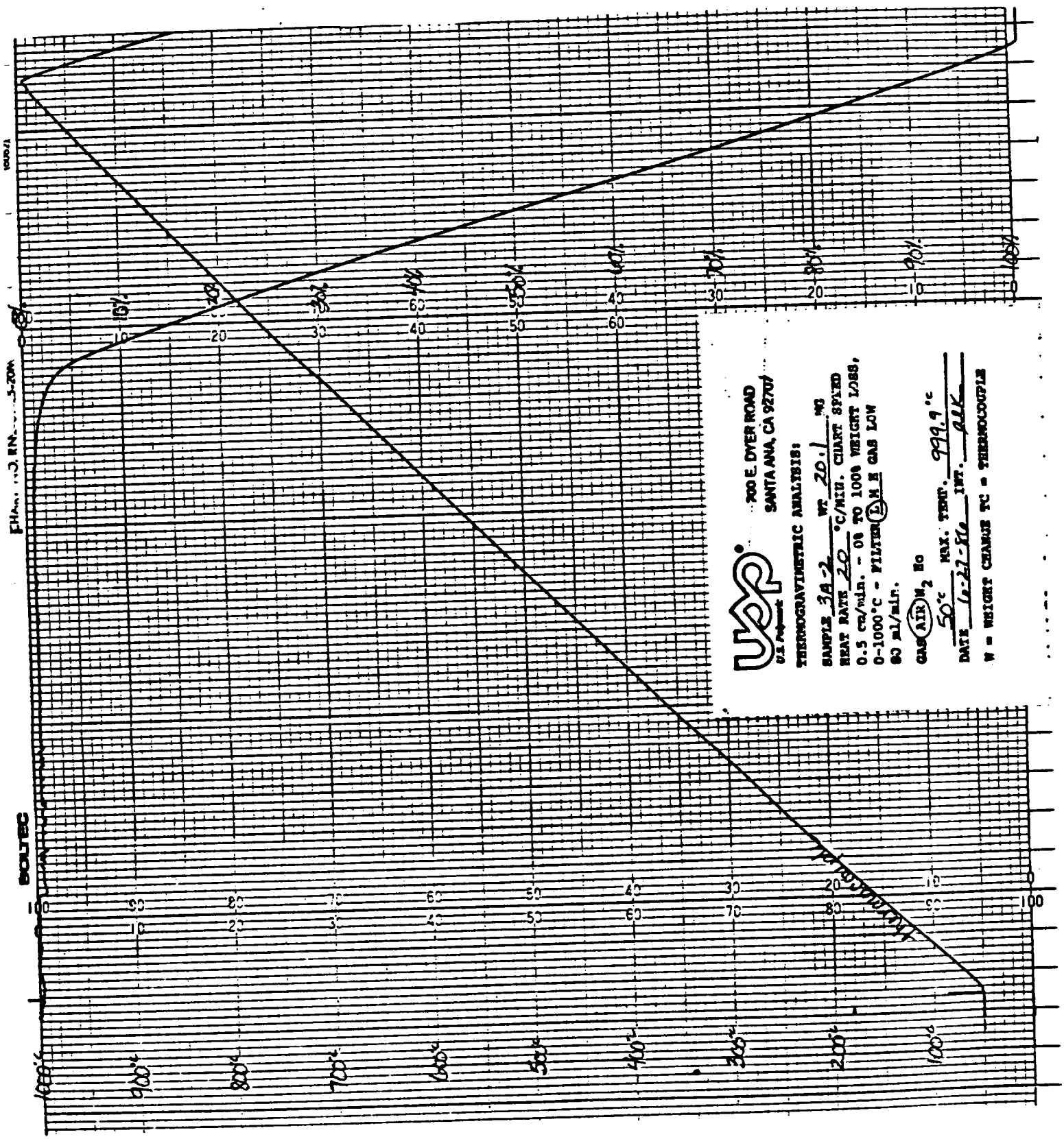

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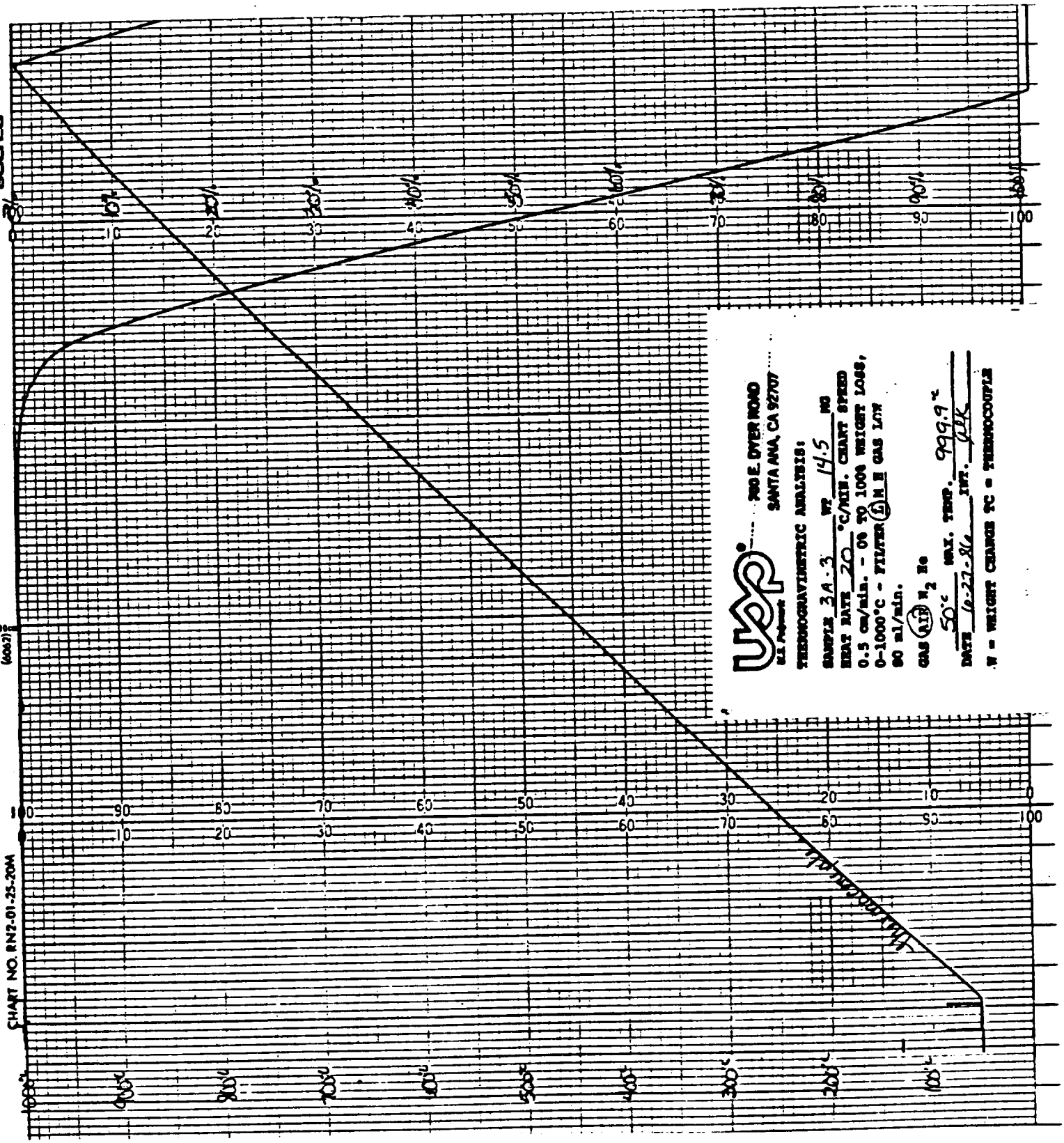
CHART 6C



HORIBA CAPA-500
PARTICLE ANALYZER

DATE 5-27-86
#1 SAMPLE NASA LOT#3A1
SOLVENT ETHYL GLYCOL
C=0.01 mg/ml

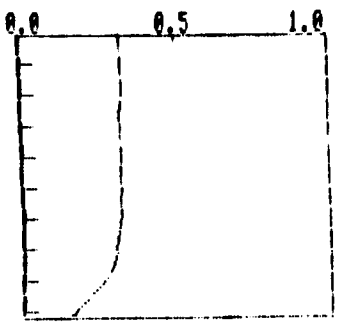
* CONDITIONS

SOLV.VISC	19.90(CP)
SOLV.DENS	1.11(G/CC)
SAMP.DENS	1.90(G/CC)
D(MAX)	5.0 (PM)
D(MIN)	0.01(PM)
D(DIV)	0.50(PM)
SPEED	5000. (RPM)

* TIME 0 H 11 MIN 31 SEC

* DATA

TIME ABSORBANCE

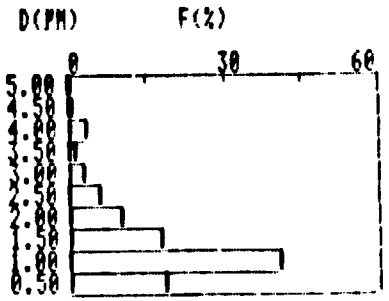


* DISTRIBUTION TABLE (BY VOL.)

D(PM)	F(%)	R(%)
5.00 <	0.0	0.0
5.00-4.50	0.0	0.0
4.50-4.00	0.5	0.5
4.00-3.50	3.2	3.6
3.50-3.00	1.0	4.7
3.00-2.50	2.5	7.2
2.50-2.00	6.0	13.1
2.00-1.50	10.2	23.3
1.50-1.00	17.5	40.8
1.00-0.50	40.7	81.5
0.50-0.00	18.5	100.0

D(AVE) 0.89 (PM)

* DISTRIBUTION GRAPH (BY VOL.)



LOT#3A-1
Sample#1

HORIBA CAPA-500
PARTICLE ANALYZER

DATE 5-27-86
#2 SAMPLE NASA LOT#3A1
SOLVENT ETHYL GLYCOL
C=0.01 mg/ml

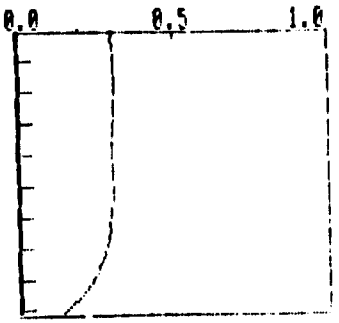
* CONDITIONS

SOLV.VISC	19.90(CP)
SOLV.DENS	1.11(G/CC)
SAMP.DENS	1.90(G/CC)
D(MAX)	5.0 (PM)
D(MIN)	0.01(PM)
D(DIV)	0.50(PM)
SPEED	5000. (RPM)

* TIME 0 H 11 MIN 31 SEC

* DATA

TIME ABSORBANCE

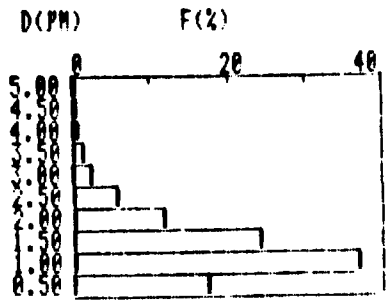


* DISTRIBUTION TABLE (BY VOL.)

D(PM)	F(%)	R(%)
5.00 <	0.0	0.0
5.00-4.50	0.0	0.0
4.50-4.00	0.0	0.0
4.00-3.50	0.6	0.6
3.50-3.00	1.2	1.8
3.00-2.50	2.3	4.1
2.50-2.00	5.6	9.7
2.00-1.50	11.8	21.5
1.50-1.00	24.2	45.7
1.00-0.50	37.0	82.7
0.50-0.00	17.3	100.0

D(AVE) 0.94 (PM)

* DISTRIBUTION GRAPH (BY VOL.)



LOT 3A-1
Sample#2

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CHART 7A

HORIBA CAPA-500
PARTICLE ANALYZER

DATE 5-23-86
SAMPLE NASA LOT#3A-2
#1 SOLVENT ETHYL GLYCOL
C=0.01 mg/ml

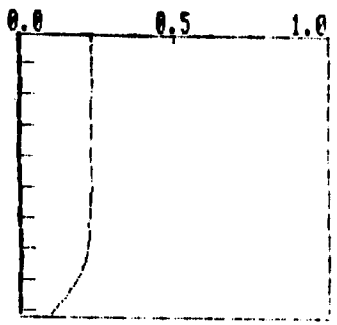
* CONDITIONS

SOLV.VISC	19.90(CP)
SOLV.DENS	1.11(G/CC)
SAMP.DENS	1.90(G/CC)
D(MAX)	5.0 (PM)
D(MIN)	0.01(PM)
D(DIV)	0.50(PM)
SPEED	5000. (RPM)

* TIME 0 H 11 MIN 31 SEC

* DATA

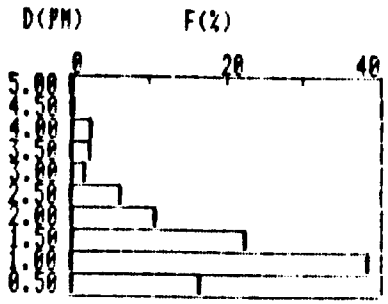
TIME ABSORBANCE



* DISTRIBUTION TABLE (BY VOL.)

D(PM)	F(%)	R(%)
5.00 <	0.0	0.0
5.00-4.50	0.0	0.0
4.50-4.00	0.0	0.0
4.00-3.50	2.3	2.3
3.50-3.00	2.4	4.7
3.00-2.50	1.5	6.2
2.50-2.00	6.2	12.5
2.00-1.50	10.6	23.1
1.50-1.00	22.3	45.4
1.00-0.50	38.4	83.8
0.50-0.00	16.2	100.0
D(AVE)	0.94 (PM)	

* DISTRIBUTION GRAPH (BY VOL.)



LOT#3A2
Sample#1

HORIBA CAPA-500
PARTICLE ANALYZER

DATE 5-23-86
SAMPLE NASA LOT#3A-2
#2 SOLVENT ETHYL GLYCOL
C=0.01 mg/ml

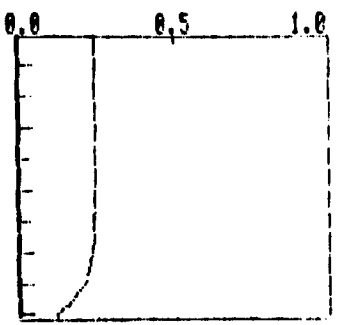
* CONDITIONS

SOLV.VISC	19.90(CP)
SOLV.DENS	1.11(G/CC)
SAMP.DENS	1.90(G/CC)
D(MAX)	5.0 (PM)
D(MIN)	0.01(PM)
D(DIV)	0.50(PM)
SPEED	5000. (RPM)

* TIME 0 H 11 MIN 31 SEC

* DATA

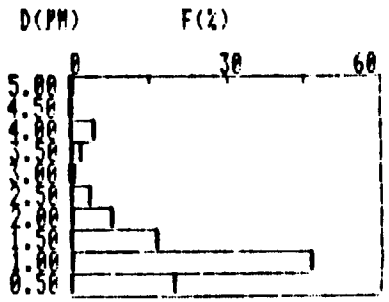
TIME ABSORBANCE



* DISTRIBUTION TABLE (BY VOL.)

D(PM)	F(%)	R(%)
5.00 <	0.0	0.0
5.00-4.50	0.0	0.0
4.50-4.00	0.0	0.0
4.00-3.50	4.2	4.2
3.50-3.00	1.6	5.9
3.00-2.50	0.6	6.4
2.50-2.00	3.6	10.0
2.00-1.50	7.8	17.8
1.50-1.00	16.3	34.2
1.00-0.50	46.3	80.5
0.50-0.00	19.5	100.0
D(AVE)	0.83 (PM)	

* DISTRIBUTION GRAPH (BY VOL.)



LOT#3A-2
Sample#2

CHART 7B

HORIBA CAPA-500
PARTICLE ANALYZER

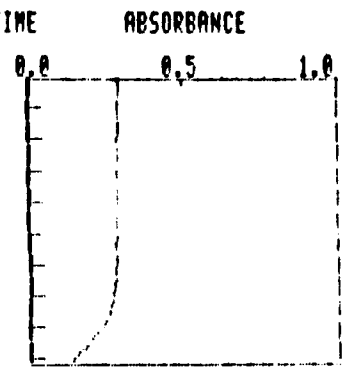
DATE 8-23-86
#1 SAMPLE NASA LOT#3A-3
SOLVENT ETHYL GLYCOL
C=0.01 mg/mL

* CONDITIONS

SOLV.VISC	19.90(CP)
SOLV.DENS	1.11(G/CC)
SAMP.DENS	1.90(G/CC)
D(MAX)	5.0 (PM)
D(MIN)	0.01(PM)
D(DIV)	0.50(PM)
SPEED	5000. (RPM)

* TIME 0 H 11 MIN 31 SEC

* DATA

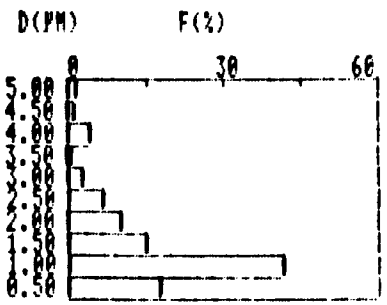


* DISTRIBUTION TABLE (BY VOL.)

D(PM)	F(%)	R(%)
5.00 <	0.0	0.0
5.00-4.50	1.4	1.4
4.50-4.00	0.9	2.3
4.00-3.50	4.2	6.5
3.50-3.00	0.3	6.9
3.00-2.50	2.5	9.4
2.50-2.00	6.5	15.9
2.00-1.50	10.0	25.9
1.50-1.00	14.8	40.7
1.00-0.50	41.7	82.3
0.50-0.00	17.7	100.0

D(AVE) 0.89 (PM)

* DISTRIBUTION GRAPH (BY VOL.)



Lot# 3A-3
Sample #1

HORIBA CAPA-500
PARTICLE ANALYZER

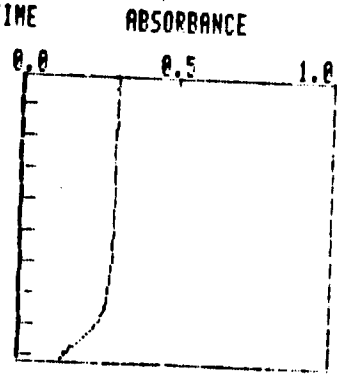
DATE 5-23-86
#2 SAMPLE NASA LOT#3A-3
SOLVENT ETHYL GLYCOL
C=0.01 mg/mL

* CONDITIONS

SOLV.VISC	19.90(CP)
SOLV.DENS	1.11(G/CC)
SAMP.DENS	1.90(G/CC)
D(MAX)	5.0 (PM)
D(MIN)	0.01(PM)
D(DIV)	0.50(PM)
SPEED	5000. (RPM)

* TIME 0 H 11 MIN 31 SEC

* DATA

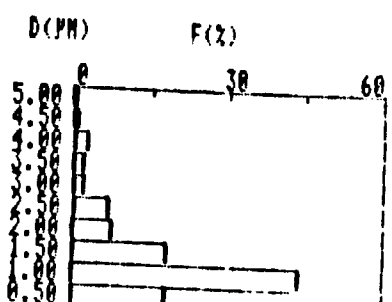


* DISTRIBUTION TABLE (BY VOL.)

D(PM)	F(%)	R(%)
5.00 <	0.0	0.0
5.00-4.50	0.0	0.0
4.50-4.00	0.5	0.5
4.00-3.50	2.3	2.8
3.50-3.00	1.8	4.5
3.00-2.50	1.8	6.3
2.50-2.00	6.6	12.9
2.00-1.50	7.5	20.3
1.50-1.00	17.8	38.1
1.00-0.50	44.0	82.1
0.50-0.00	17.9	100.0

D(AVE) 0.86 (PM)

* DISTRIBUTION GRAPH (BY VOL.)



Lot # 3A-3
Sample #2

CHART 7C

TABLE OF CONTENTS

RESIN TESTING

NAS8-36298

U.S. Polymeric O.E. 71108

91LD Resin Lot for NASA Lot# 3

CHARTS

U.S. Polymeric

RESIN TESTING

NAS8-36298

U.S. Polymeric O.E. 71108

91LD Resin Lot for NASA Lot# 3

1. Resin Solids, %
   PTM-7C

#3-1	#3-2	#3-3
71.8	71.6	71.3
71.4	71.8	72.3
71.8	70.5	71.3
AVG. 71.7	71.3	71.6

Lot# 3 AVERAGE 71.5

2. Specific Gravity @ 25°C
   PTM-29C

1.129	1.131	1.128

Lot# 3 AVERAGE 1.129

3. Viscosity, Brookfield, cps. @ 22.8°C
   PTM-14C

1250	1375	1250

Lot# 3 AVERAGE 1292

4. Gel Time, min:sec
   PTM-47B

3:40	3:38	3:33

Lot# 3 AVERAGE 3:37

5. Atomic Absorption, ppm
   CTM-53B

	#3-1	#3-2	#3-3	LOT1 AVG
Na	8	14	14	12.0
K	0	0	0	0.0
Ca	5	5	5	5.0
Mg	1	1	1	1.0
Li	1	1	1	1.0
AVG.	15	21	21	19.0

See Charts 6A-6C

6. Volatiles, Gas Chromatography
   CTM-55

7. TGA, % Weight Loss at 500°C
   CTM-51 (AIR)

#3-1	#3-2	#3-3
38.7	38.5	38.2

Lot# 3 AVERAGE 38.5

See Chart 7A-7C

8. DSC, temperature °C
   CTM-50A

178	183	185

Lot# 3 AVERAGE 182

See Chart 8A-8C

See Chart 9A-9C

9. HPLC
   CTM-49A

10. GPC, Average molecular wt.
    CTM-49A

1666	1751	1838

Lot# 3 AVERAGE 1752

See Chart 10A-10C

HITCO MATERIALS DIVISION
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91LD Resin Lot for NASA Lot# 3

		#3-1	#3-2	#3-3
11. pH, units CTM-1B		8.5	8.5	8.55
		Lot# 3 AVERAGE		8.5
12. Phenol Content, % CTM-55 Appendix 1		12.22	11.92	11.72
		12.57	12.10	11.73
	AVG.	12.39	12.01	11.72
		Lot# 3 AVERAGE		12.04
13. Chang's Index, ml. CTM-5B		24.8	24.6	25.2
		Lot# 3 AVERAGE		24.9

14. RDS, Minimum Viscosity, cps. CTM-57A

	Min. Visc.	°C
#3-1	179	107
#3-2	212	115
#3-3	201	107
AVG.	197	110

See Charts 14A-14C

See Charts 15A-15C

15. NMR
Vendor procedure

U. S. Polymeric

Hamid M. Quraishi

Hamid M. Quraishi, Manager
Quality Assurance Department

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OF POOR QUALITY

TYPICAL GAS CHROMATOGRAPH SET-UP

Operator	G.A.G.	Date	12/10/86
Column		Detector	FID
Length	6 ft.	Voltage	
Dia.	1/4 in.	Sensit.	
Liquid Phase	AT1000	Flow Rates, ml/min	
Wt. %	0.1	Hydrogen	60 Air 96
Support	GRAPHPAC	Scavenge	
Mesh	80/100	Split	
Carrier Gas	He	Temperature, °C	
Rotameter		Det. 220 Inj. 200	
Inlet Press	60 psig	Column Initial	60
Rate	30 ml/min	Final	210
CHART SPEED		Rate	5°C/MIN
SAMPLE	9170,3-1	Solvent	THF
Size	0.1 µl	Concn.	0.01% JMS

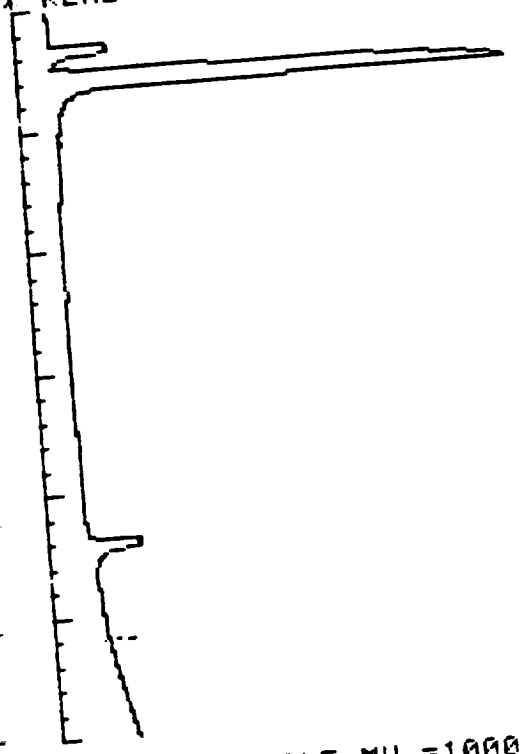
GAS CHROMATOGRAPHY STANDARD SOLVENT

TEST METHOD CTM-55

STANDARD SOLVENT/MONOMER	RETENTION TIME (MINS.)
	.6
MEOH	1.18
ETHANOL	1.28
MECL2	1.45
ACETONE	1.83
IPA	3.08
THF	3.2
ACETONITRILE	4.03
CRESOL	4.08
MEK	15.03
FURFURAL	17.98
TOLUENE	19.6
CHLOROBENZENE	22.08
PHENOL	

NOTE: THF WAS USED TO DILUTE THE RESIN SAMPLES.

*** REAL TIME CHROMATOGRAM ***



FINAL FULL SCALE MV.=1000.00

SAMPLE: 91 LD 3-1
MISC.: C=0.09941 GMS/ML

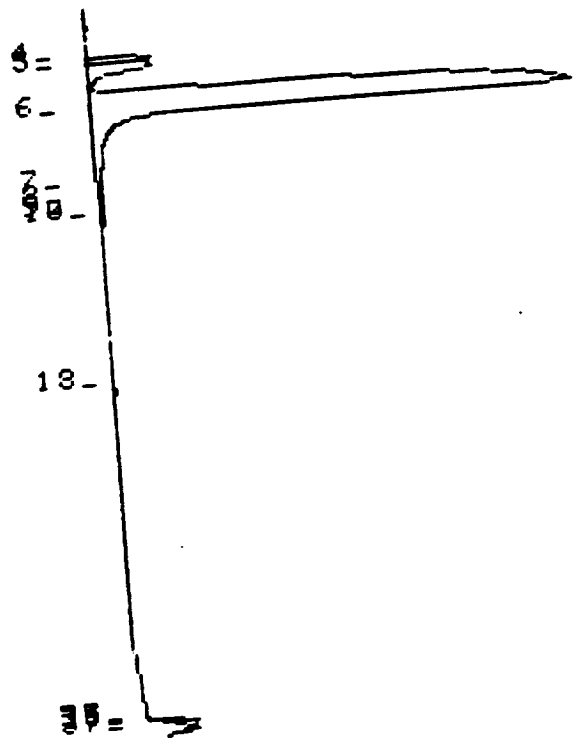
TIME: 17:40
DATE: 12/10/86
OPERATOR: JGZ

RUN TIME: 30.00 MINUTES
DELAY TIME: 0.00
CHAN: 0

PK NO.	RET TIME	PEAK AREA	AREA %	B L	PEAK HT.
			.091	1	433
2	.63	3625	2.876	2	11211
4	1.63	115080	5.374	2	11219
5	1.88	215000	88.707	3	86537
6	3.33	3548900	.293	4	573
7	5.58	11738	.262	4	391
8	5.98	10483	.112	4	395
9	6.35	4501	.490	4	376
10	6.58	19617	.272	2	519
18	11.75	10886	.888	2	5295
35	21.95	35525	.302	2	1684
36	22.08	12068	.332	1	1675
37	22.20	13296			

TOTAL AREA= 4000718
THRESHOLD= 1
MIN.PK.WIDTH= 15
AREA REJECT= 1000

VERTICAL SCALE FACTOR: 1X



SAMPLE: 91 LD 3-1
MISC.: C=0.09941 GMS/ML

TIME: 17:40
DATE: 12/10/86
OPERATOR: JGZ

RUN TIME: 30.00 MINUTES
DELAY TIME: 0.00
CHAN: 0

PK NO.	RET TIME	PEAK AREA	AREA %	B L	PEAK HT.
4	1.63	115080	2.882	2	11211
5	1.88	215000	5.385	2	11219
6	3.33	3548900	88.887	3	86537
7	5.58	11738	.294	4	573
8	5.98	10483	.263	4	391
10	6.58	19617	.491	4	376
18	11.75	10886	.273	2	519
35	21.95	35525	.890	2	5295
36	22.08	12068	.302	2	1684
37	22.20	13296	.333	1	1675

TOTAL AREA= 3992593
THRESHOLD= 1
MIN.PK.WIDTH= 15
AREA REJECT= 5000

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CHART 6B

*** REAL TIME CHROMATOGRAM ***

FINAL FULL SCALE MV.=1000.00

SAMPLE 91 LD 3-2
MISC.: C=0.10126 GMS/ML

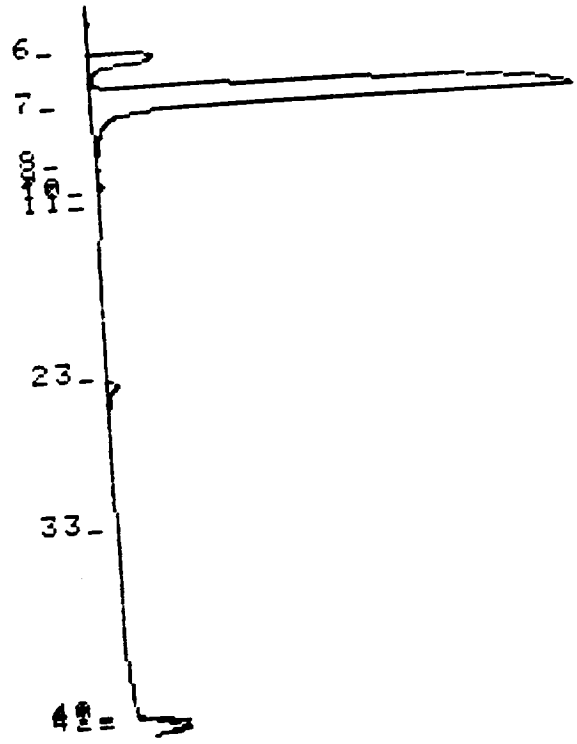
TIME: 18:24
DATE: 12/10/86
OPERATOR: JGZ

RUN TIME: 30.00 MINUTES
DELAY TIME: 0.00
CHAN: 0

PK NO	RET TIME	PEAK AREA	AREA %	B L	PEAK HT.
3	.63	1800	.053	1	276
6	1.70	250680	7.316	2	11092
7	3.30	3049400	88.991	3	84633
8	5.10	10194	.297	4	409
9	5.58	14229	.415	3	996
10	5.98	2416	.071	4	96
11	6.40	1369	.040	4	98
23	11.68	35297	1.030	3	1855
33	16.25	2731	.080	1	140
40	21.95	34535	1.008	2	5148
41	22.08	10786	.315	2	1570
42	22.20	13211	.386	1	1686

TOTAL AREA= 3426648
THRESHOLD= 1
MIN.PK.WIDTH= 15
AREA REJECT= 1000

VERTICAL SCALE FACTOR: 1X



SAMPLE 91 LD 3-3
MISC.: C=0.10126 GMS/ML

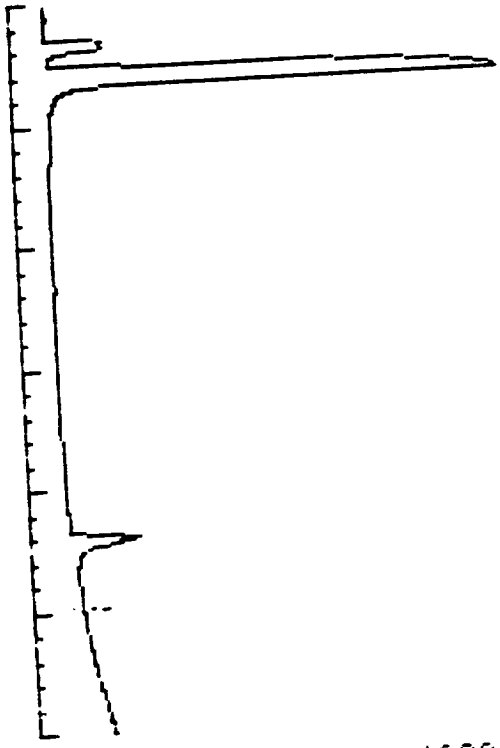
TIME: 18:24
DATE: 12/10/86
OPERATOR: JGZ

RUN TIME: 30.00 MINUTES
DELAY TIME: 0.00
CHAN: 0

PK NO	RET TIME	PEAK AREA	AREA %	B L	PEAK HT.
6	1.70	250680	7.333	2	11092
7	3.30	3049400	89.207	3	84633
8	5.10	10194	.298	4	409
9	5.58	14229	.416	3	996
23	11.68	35297	1.033	3	1855
40	21.95	34535	1.010	2	5148
41	22.08	10786	.316	2	1570
42	22.20	13211	.386	1	1686

TOTAL AREA= 3418332
THRESHOLD= 1
MIN.PK.WIDTH= 15
AREA REJECT= 5000

*** REAL TIME CHROMATOGRAM ***



FINAL FULL SCALE MV.=1000.00

SAMPLE: 91 LD 3-3
MISC.: C=0.10052 GMS/ML

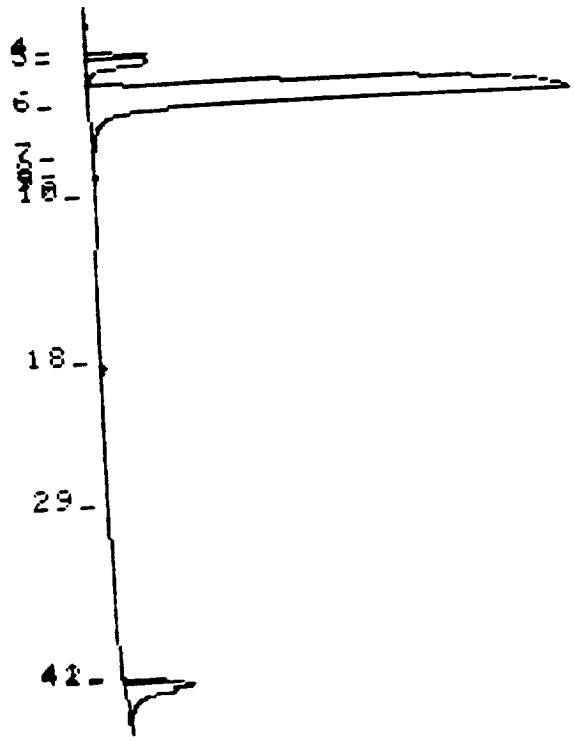
TIME: 19:08
DATE: 12/10/86
OPERATOR: JGZ

RUN TIME: 30.00 MINUTES
DELAY TIME: 0.00
CHAN: 0

PK NO.	RET TIME	PEAK AREA	AREA %	B L	PEAK HT.
			.135	2	579
2	.63	5795	1.808	2	10929
4	1.63	77409	5.639	2	10997
5	1.90	241490	82.826	3	85797
6	3.40	3546900	.170	4	258
7	5.10	7286	.166	4	547
8	5.60	7111	.095	4	189
9	5.98	4081	.076	4	152
10	6.40	3260	.358	1	829
18	11.73	15339	.028	2	51
29	16.38	1188	1.276	2	9517
41	21.93	54630	7.423	3	12752
42	22.05	317880			

TOTAL AREA= 4282369
THRESHOLD= 1
MIN.PK.WIDTH= 15
AREA REJECT= 1000

VERTICAL SCALE FACTOR: 1X



SAMPLE: 91 LD 3-3
MISC.: C=0.10052 GMS/ML

TIME: 19:08
DATE: 12/10/86
OPERATOR: JGZ

RUN TIME: 30.00 MINUTES
DELAY TIME: 0.00
CHAN: 0

PK NO.	RET TIME	PEAK AREA	AREA %	B L	PEAK HT.
4	1.63	77409	1.820	2	10929
5	1.90	241490	5.677	2	10997
6	3.40	3546900	83.385	3	85797
18	11.73	15339	.361	1	829
41	21.93	54630	1.284	2	9517
42	22.05	317880	7.473	3	12752

TOTAL AREA= 4253648
THRESHOLD= 1
MIN.PK.WIDTH= 15
AREA REJECT= 10000

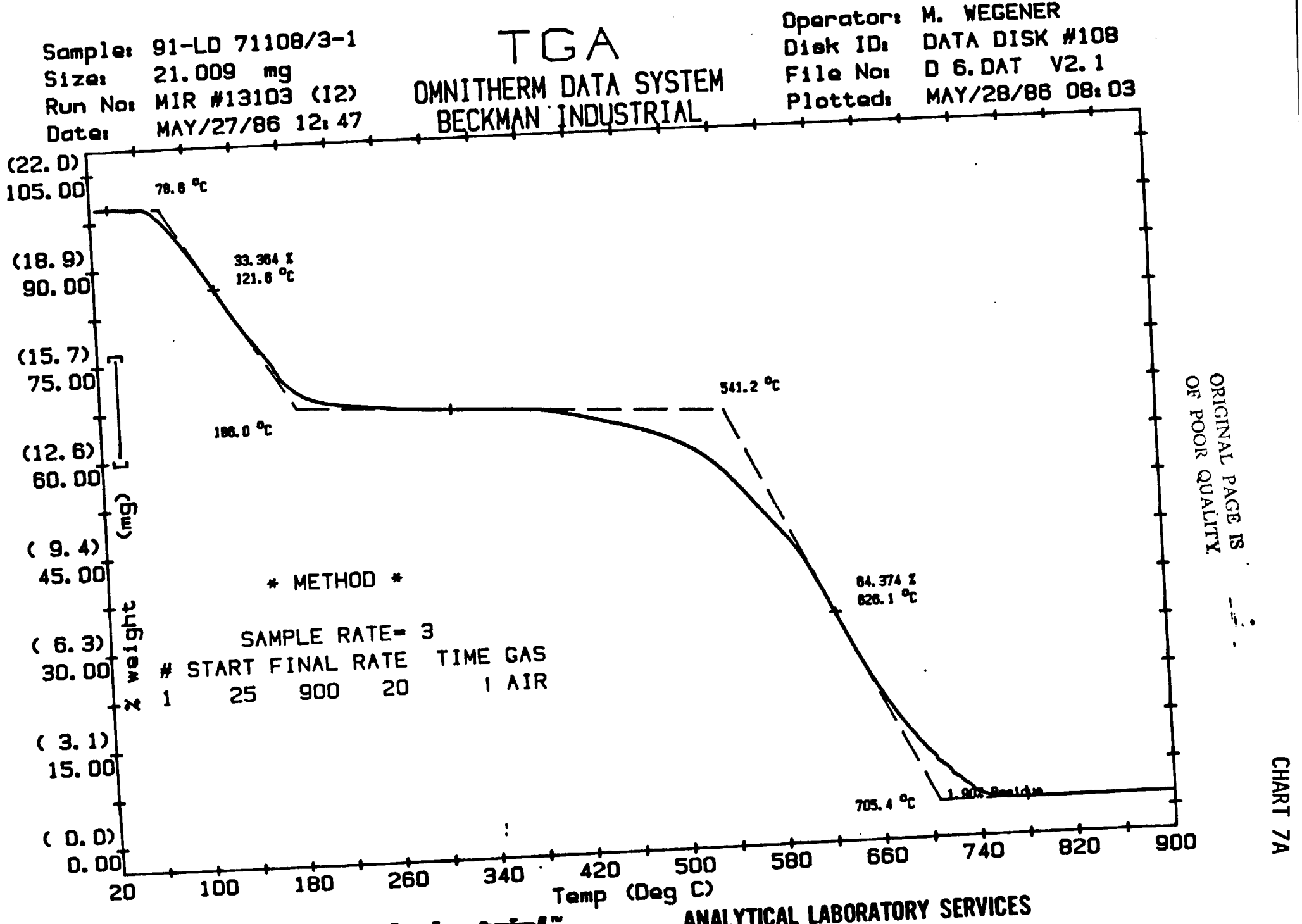
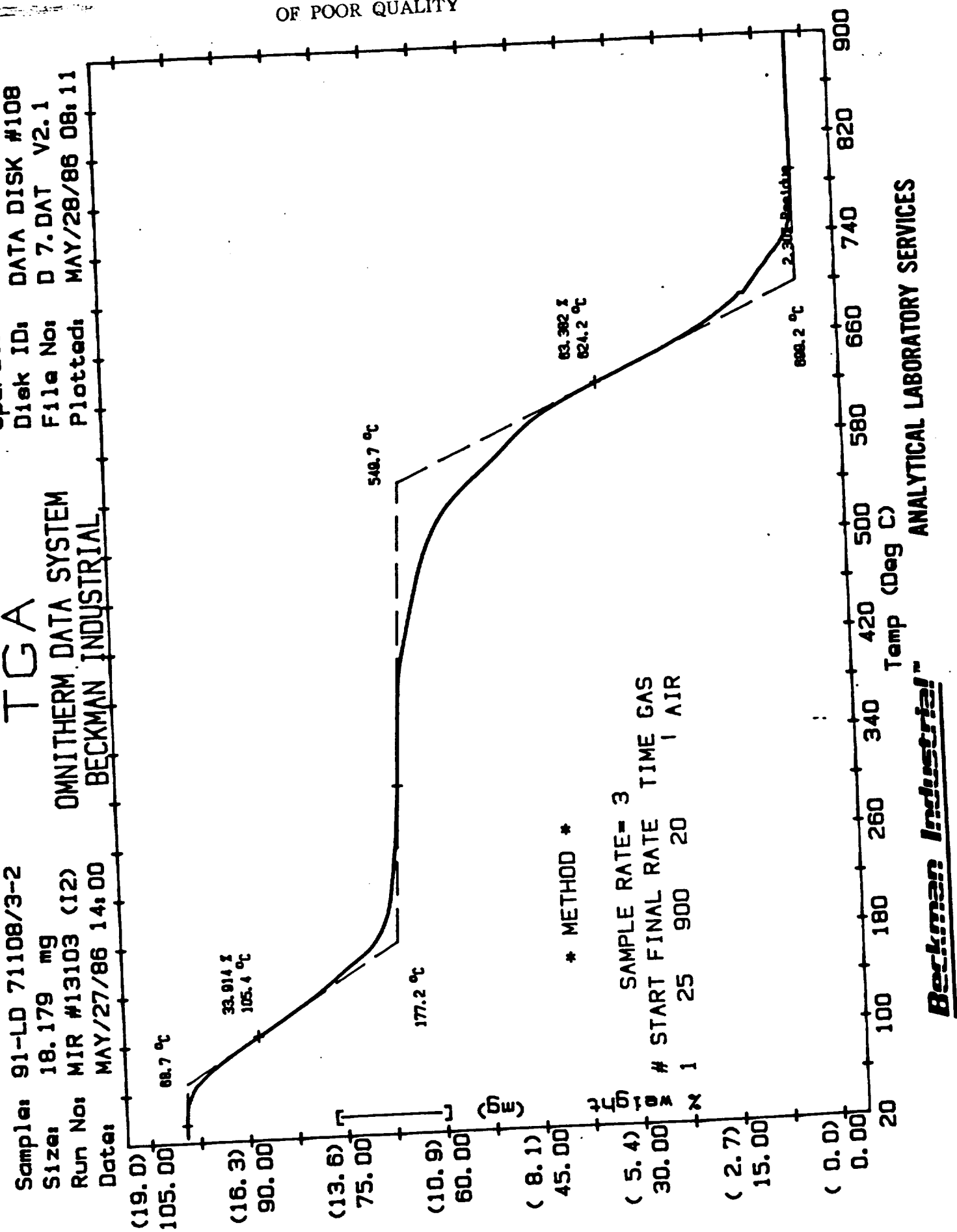
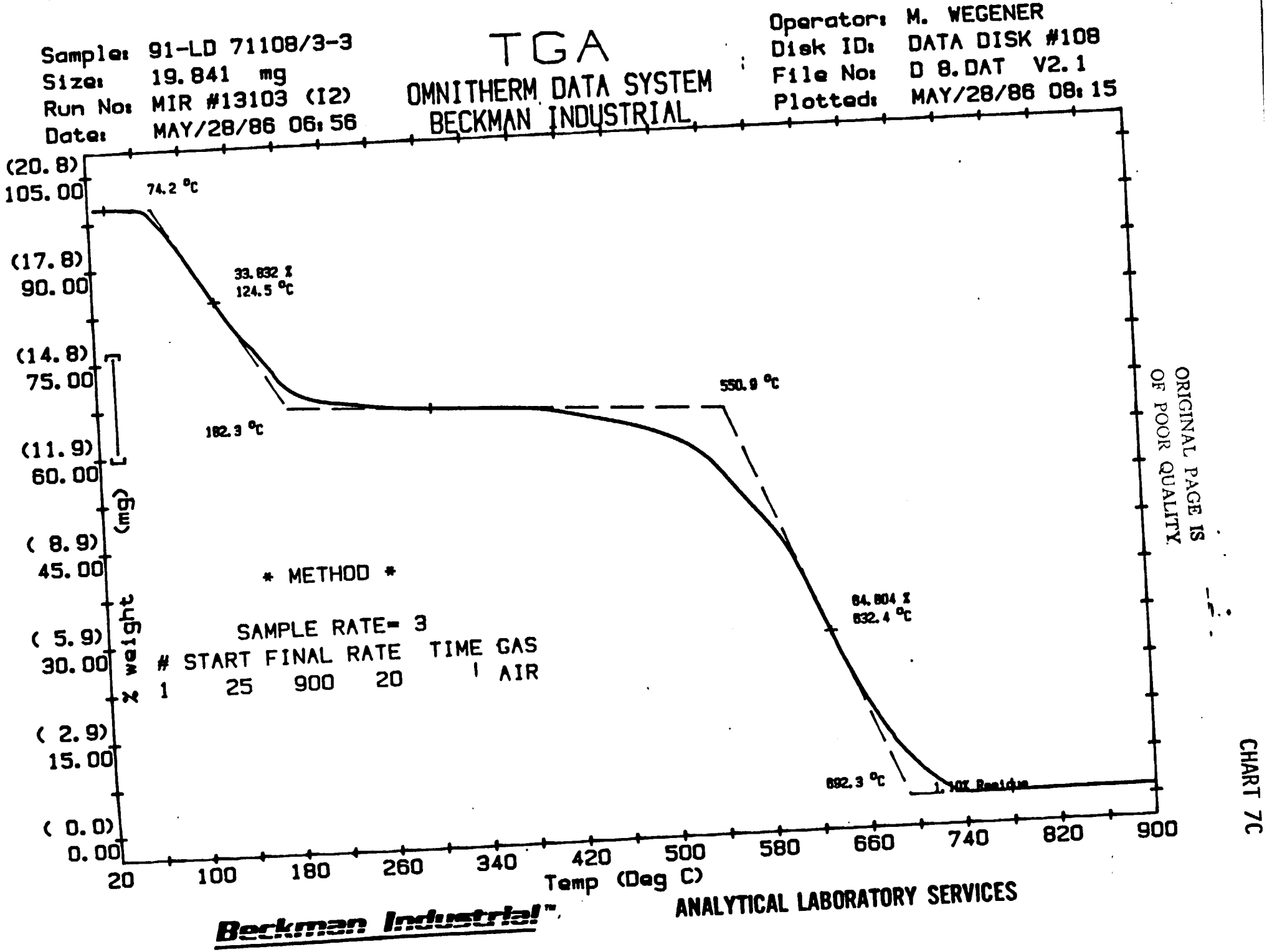

Sample: 91-LD 71108/3-1
Size: 21.009 mg
Run No: MIR #13103 (12)
Date: MAY/27/86 12:47
TGA
OMNITHERM DATA SYSTEM
BECKMAN INDUSTRIAL
Operator: M. WEGENER
Disk ID: DATA DISK #108
File No: D 6.DAT V2.1
Plotted: MAY/28/86 08:03
(22.0) 105.00
(18.9) 90.00
(15.7) 75.00
(12.6) 60.00
(9.4) 45.00
(6.3) 30.00
(3.1) 15.00
(0.0) 0.00
% weight
(mg)
78.6 °C
33.364 %
121.6 °C
186.0 °C
541.2 °C
84.374 %
626.1 °C
705.4 °C
* METHOD *
SAMPLE RATE= 3
START FINAL RATE TIME GAS
1 25 900 20 1 AIR
20 100 180 260 340 420 500 580 660 740 820 900
Temp (Deg C)
Beckman Industrial™
ANALYTICAL LABORATORY SERVICES
ORIGINAL PAGE IS OF POOR QUALITY.
CHART 7A

CHART 7B

ORIGINAL PAGE IS
OF POOR QUALITY





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OF POOR QUALITY

CHART 7C

CHART 8A

U.S. POLYMERIC DSC-2

Sample ..... Wt. .....
Heat Rate: ..... °C/min. Range .....
Recorder Span: ..... mV Chart speed .....
Temp. Limits: Lower ..... Upper ..... °C/min.
Mode: Hold/Autocool/Cycle Cooling Rate .....
Operator ..... Date .....

9-8-92 LAST CALIBRATION DATE

+2 CALIBRATION DELTA °C

EXOTHERM

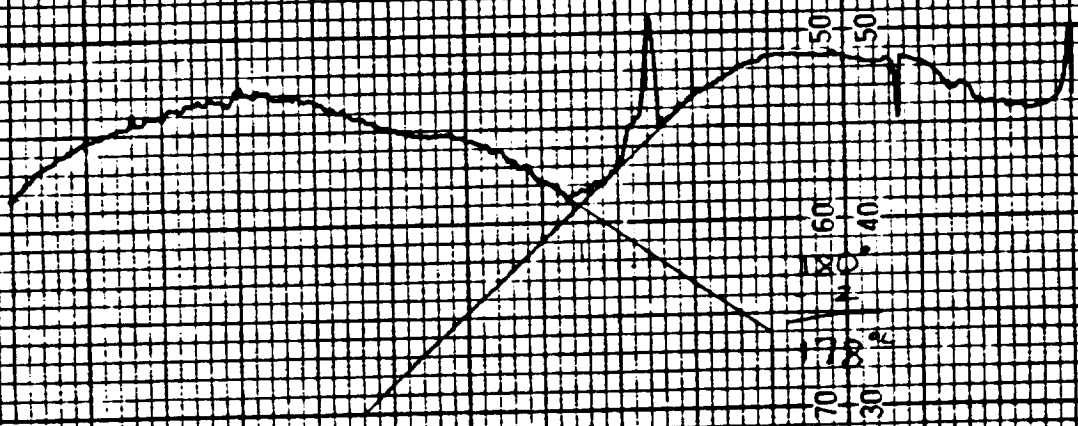


CHART 8B

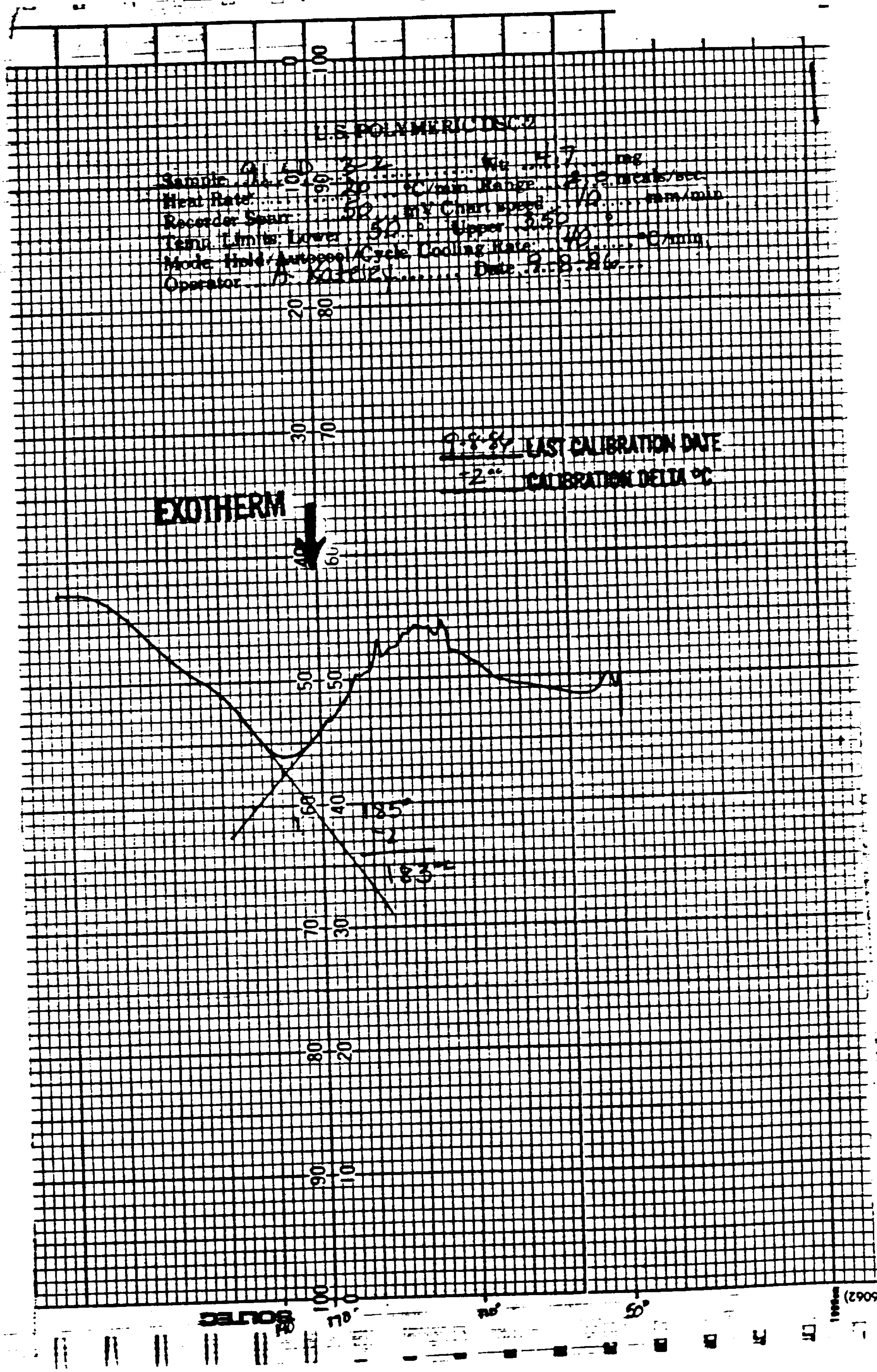


CHART 8C

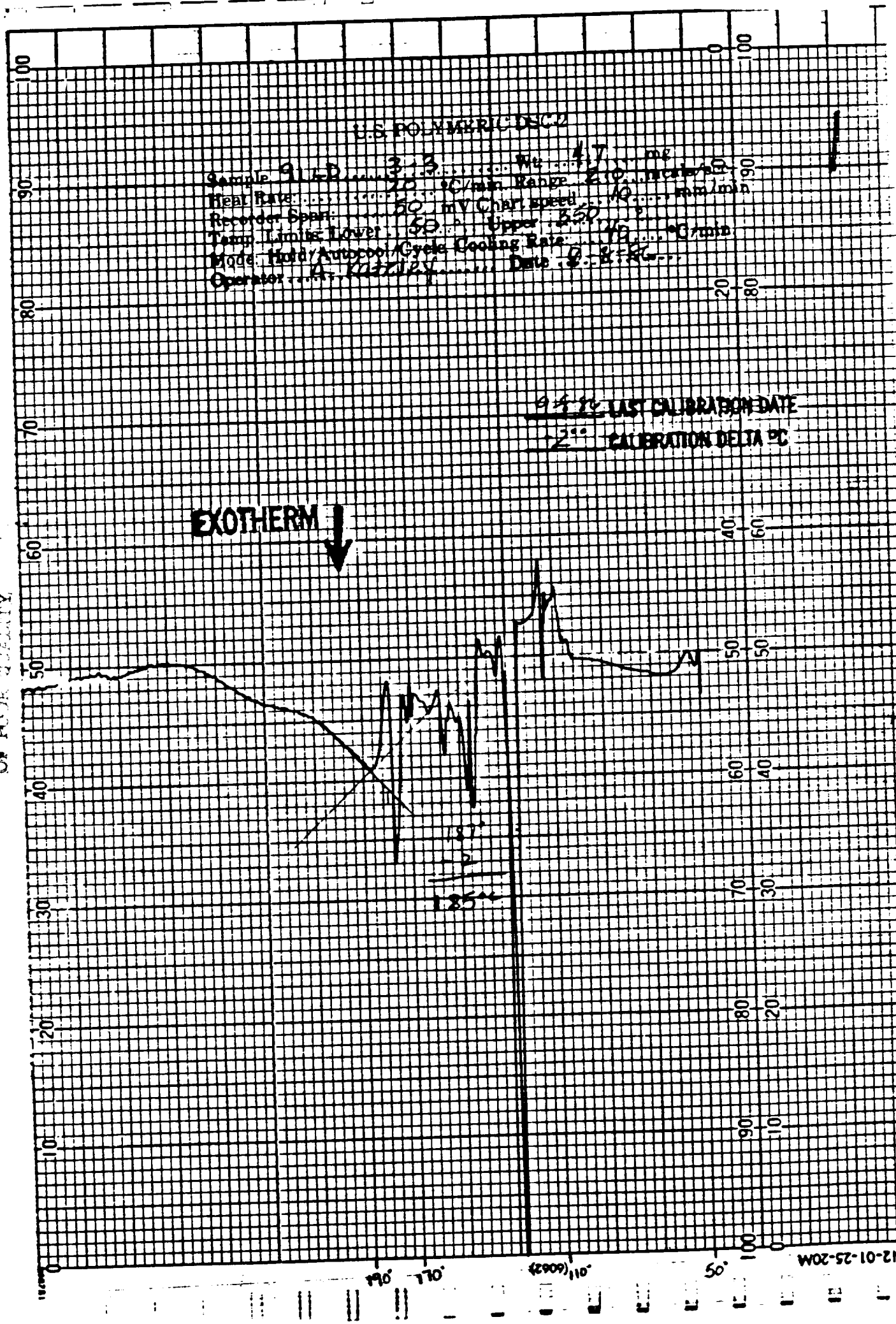


CHART 9A

DATA FILE A:PHEN036.HDR TAKEN 09-05-1986 15:49:05

********* AREA PERCENT REPORT *********

Sample Name: 91LD,3-1,C=6.76 Operator Initials: JGZ
Date: 09-05-1986 15:49:05 Method:PHENOLIC DATA FILE: A:PHEN036.PTS
Interface: 4 Cycle#: 36 Channel#: 0 Vial#: N.A.
Starting Peak Width: 10 Threshold: .01

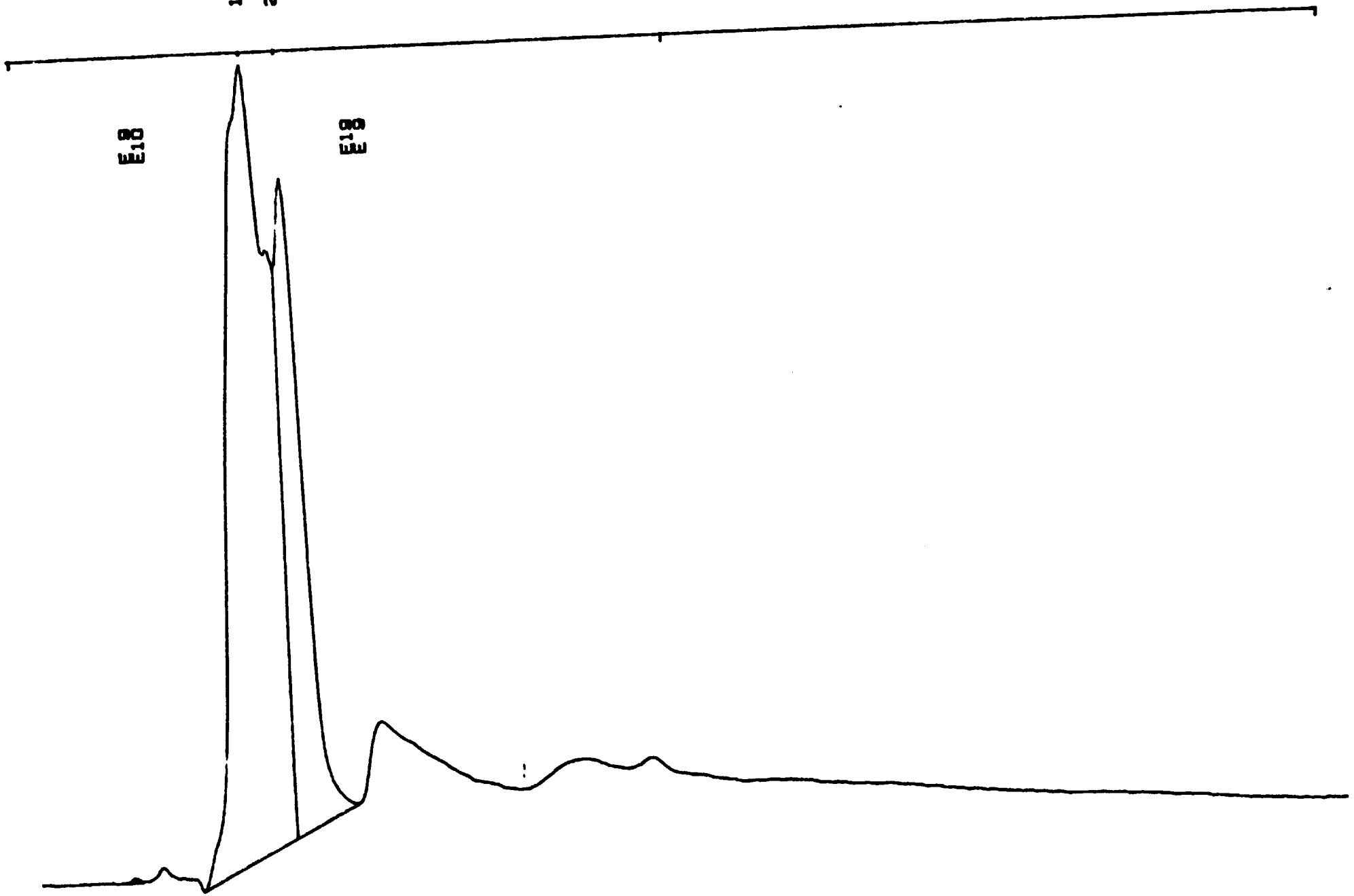
Instrument Type: BECKMAN HPLC Column Type: MICROBONDAPAK C-18
Solvent Description: THF/WATER, 2:1 BY WEIGHT
Operating Conditions: R.T., FLOWRATE=1.5 ML/MIN
Detector 0: 220NM/.5AU Detector 1:
Misc. Information: LENGTH=25

Starting Delay: 0.00 Ending Retention Time: 10.00

Pk No.	Ret Time	Peak Area	Area %	B L	Peak Ht.	Normalized %	Area/ Height
2	1.80	118498	73.6309	2	5085	100.000	23.3
3	2.07	42437	26.3691	2	4223	35.813	10.1

Total Area: 160935 Area Reject: 1000 One sample per 1.000 sec.

DATA FILE=PHEN036 FROM 0.00 MIN. TO 10.00 MIN. LOW SCALE= 5.411 Mv. HIGH SCALE= 10.739 Mv.
91 LD. 3-1. C=6.76 MG/ML. 9/5/86. JGZ



DATA FILE A:MB561.HDR TAKEN 09-05-1986 14:15:09
DATA FILE A:PHEN035.HDR TAKEN 09-05-1986 15:28:08

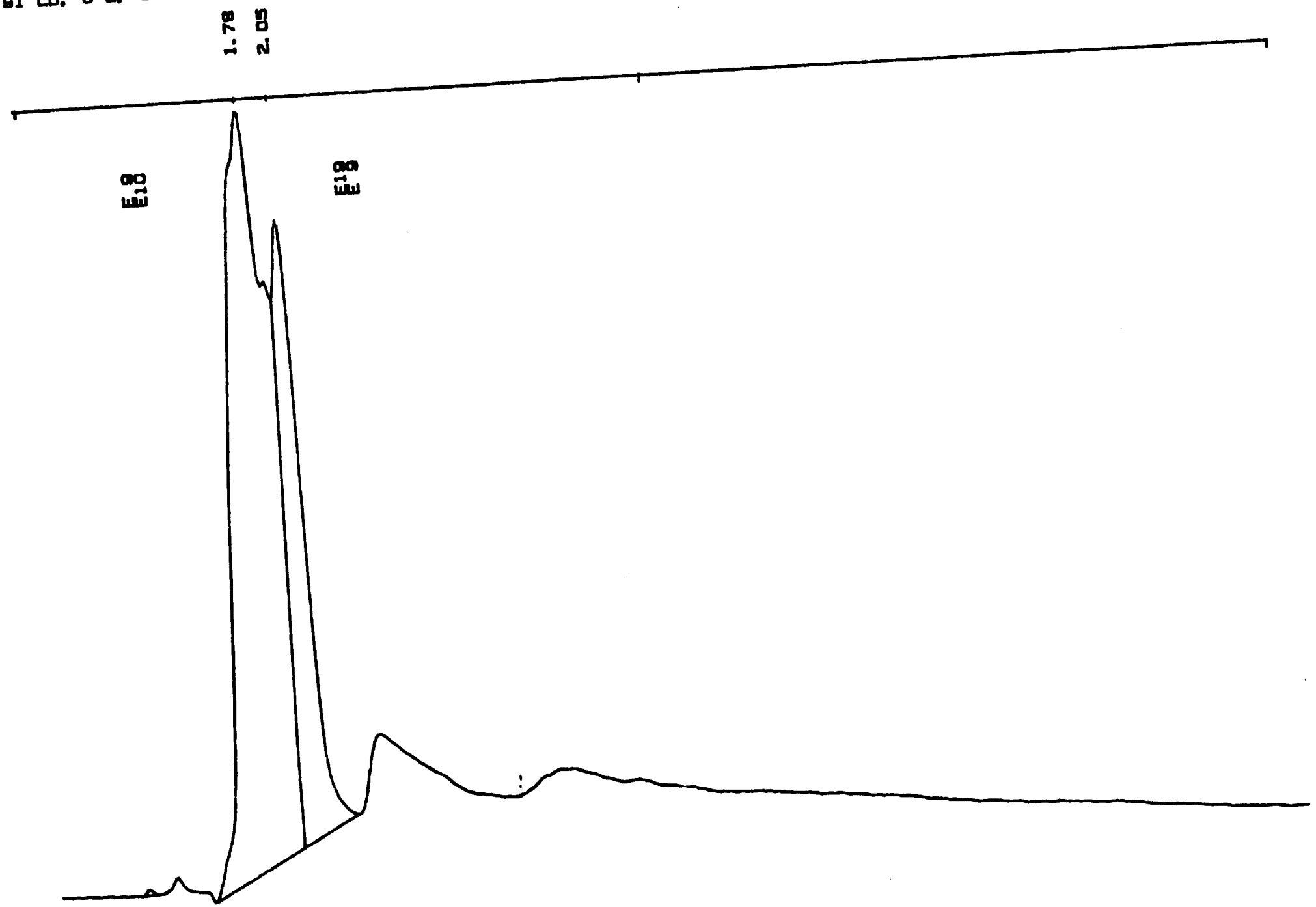
******** AREA PERCENT REPORT ********

Sample Name: 91LD,3-2,C=6.99 Operator Initials: JGZ
Date: 09-05-1986 15:28:08 Method:PHENOLIC DATA FILE: A:PHEN035.PTS
Interface: 4 Cycle#: 35 Channel#: 0 Vial#: N.A.
Starting Peak Width: 10 Threshold: .01
Instrument Type: BECKMAN HPLC Column Type: MICROBONDAPAK C-18
Solvent Description: THF/WATER, 2:1 BY WEIGHT
Operating Conditions: R.T., FLOWRATE=1.5 ML/MIN
Detector 0: 220NM/.5AU Detector 1:
Misc. Information: LENGTH=25
Starting Delay: 0.00 Ending Retention Time: 10.00

Peak No.	Ret Time	Peak Area	Area %	B L	Peak Ht.	Normalized %	Area/ Height
2	1.78	117907	74.0922	2	5029	100.000	23.4
3	2.05	41228	25.9078	2	4167	34.967	9.9

Total Area: 159135 Area Reject: 1000 One sample per 1.000 sec.

DATA FILE=PHEN035 FROM 0.00 MIN. TO 10.00 MIN. LOW SCALE= 5.378 Mv. HIGH SCALE= 10.654 Mv.
91 LD. 3-2. C=6.98 MG/ML. 9/5/86. JGZ



ATA FILE A:PHEN034.HDR TAKEN 09-05-1986 15:07:23

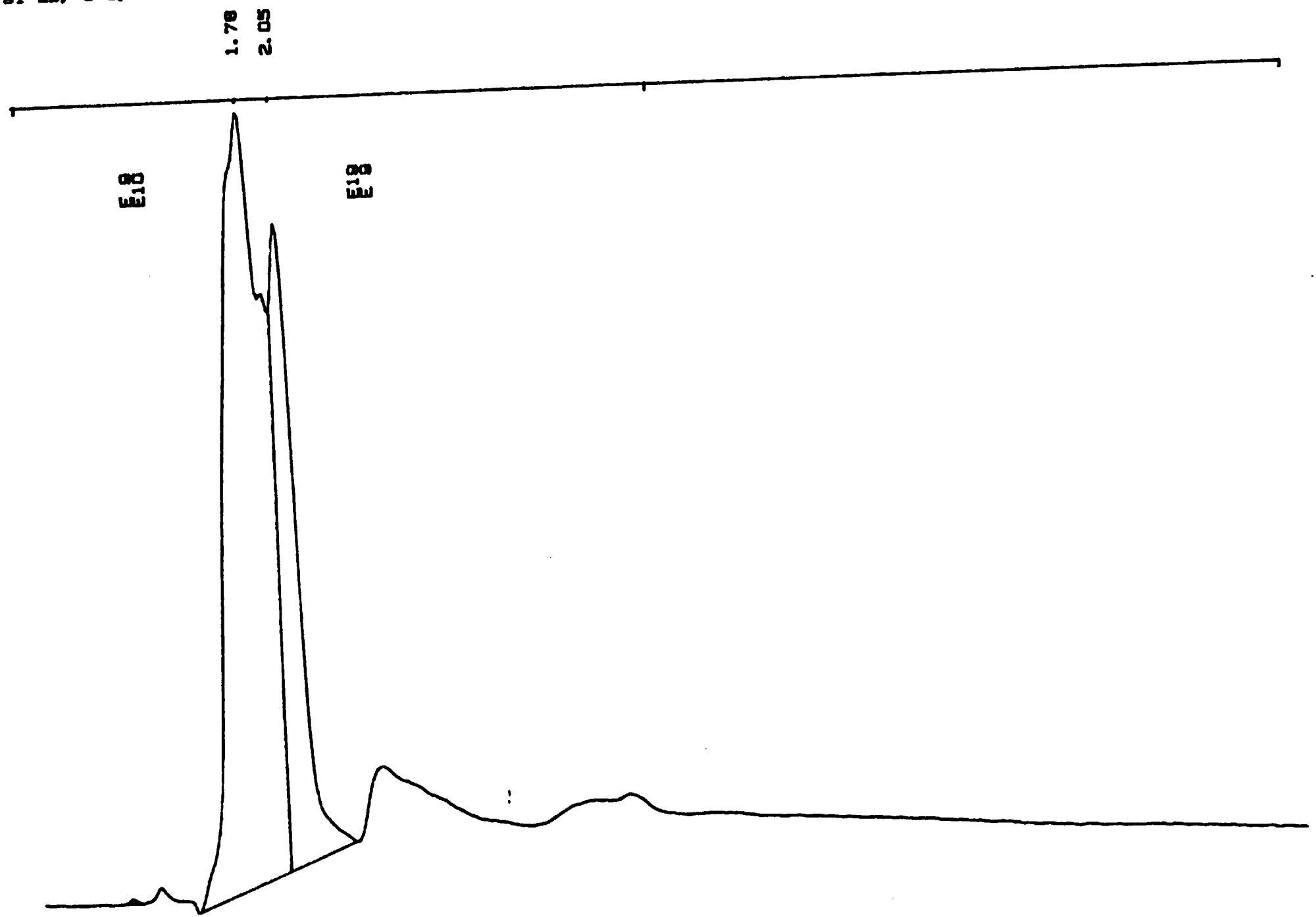
******** AREA PERCENT REPORT ********

Sample Name: 91LD,3-3,C=6.67 Operator Initials: JGZ
Date: 09-05-1986 15:07:23 Method:PHENOLIC DATA FILE: A:PHEN034.PTS
Interface: 4 Cycle#: 34 Channel#: 0 Vial#: N.A.
Starting Peak Width: 10 Threshold: .01
Instrument Type: BECKMAN HPLC Column Type: MICROBONDAPAK C-18
Solvent Description: THF/WATER, 2:1 BY WEIGHT
Operating Conditions: R.T., FLOWRATE=1.5 ML/MIN
Detector 0: 220NM/.5AU Detector 1:
Misc. Information: LENGTH=25
Ending Retention Time: 10.00
Starting Delay: 0.00

Pk No	Ret Time	Peak Area	Area %	B L	Peak Ht.	Normalized %	Area/ Height
3	1.78	118569	73.0817	2	5139	100.000	23.1
1	2.05	43673	26.9184	2	4294	36.833	10.2

Total Area: 162242 Area Reject: 1000 One sample per 1.000 sec.

DATA FILE=PHEN034 FROM 0.00 MIN. TO 10.00 MIN. LOW SCALE= 5.410 Mv. HIGH SCALE= 10.735 Mv.
91 LD, 3-3, C=6.67 MG/ML, 9/5/86, JGZ



*** Calibration Data ***
Calibration Name:
Misc Information:

Fit Type: 3
Log Mol Wt = A + Bx + Cx^2 + Dx^3
A= 2.538977 B= 2.115815 C= -.5646824 D= 3.606432E-02
Coefficient of Determination: 0.9902

Ret Time	Molecular Weight	Log Mol Wt
3.50	35000	4.544
4.33	15000	4.176
4.83	3600	3.556
5.09	2350	3.371
6.00	570	2.756
7.17	92	1.964
7.50	72	1.857

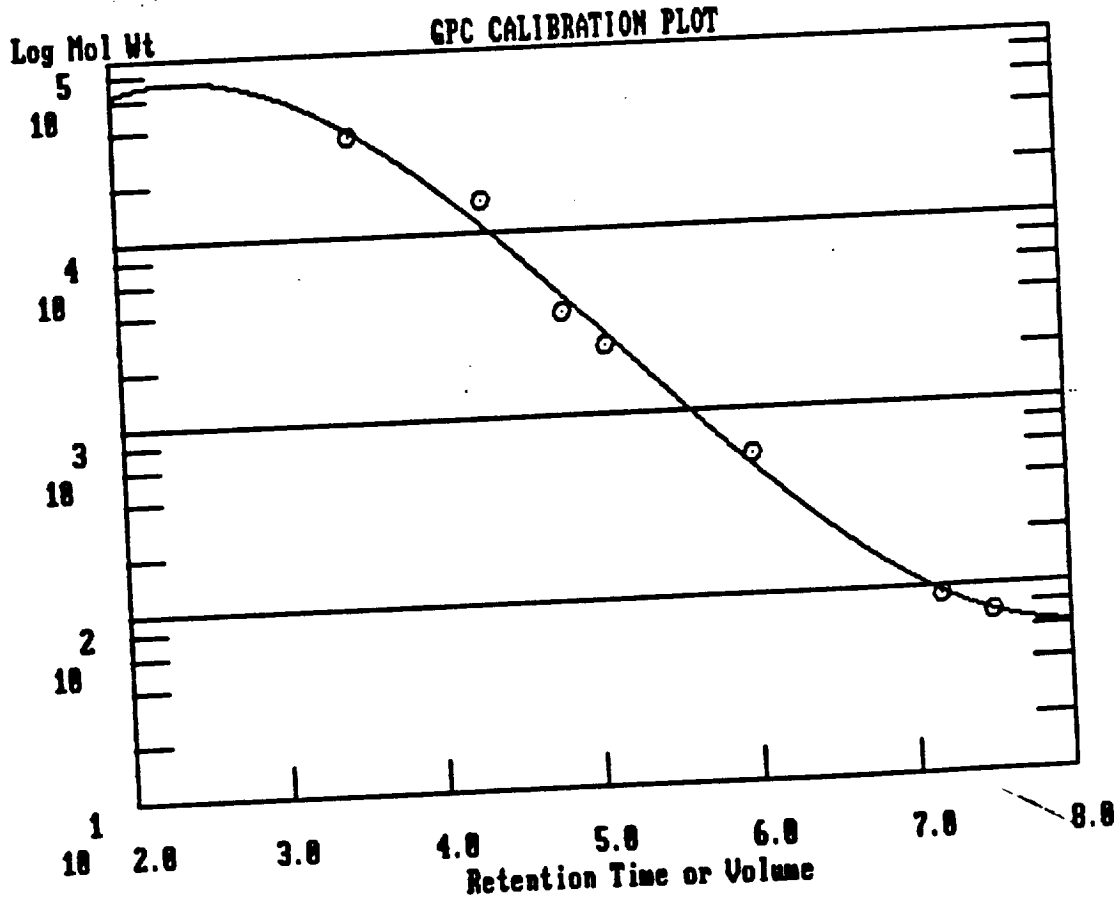


CHART 10A

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AT FILE B:GPC21 .HDR TAKEN 08-05-1986 17:26:22

********** GPC REPORT **********

```
**********************************************************************
* **********                                  Operator Initials: GBF   *
 Sample Name: 91LD 3-1 C=2.68                 DATA FILE: B:GPC21 .PTS  *
 Date: 08-05-1986 11:42:15 Method:            Channel#: 0  Vial#: N.A. *
 Interface: 5              Cycle#: 21                                  *
 Starting Peak Width: 60   Threshold: 0                                *
**********************************************************************
  Instrument Type: HPLC/BECKMAN              Column Type: ULTRASTYRAGEL 500A *
                 Solvent Description: THF                              *
    Operating Conditions: T=35C FLOWRATE=2.0ML/MIN                     *
                 Detector 0: 254NM/.1AU        Detector 1:             *
       Misc. Information: CALIBRATION/GPC                              *
**********************************************************************
                                            Ending Retention Time:   10.00
Starting Delay:    0.00
Calibration file: GPCPHEN
Molecular Weight Distribution Averages
Baseline TIMES:    3.85 to   10.00   MW:    22295 to          2
Process TIMES:     3.85 to   10.00   MW:    22295 to          2
Total Area:       256218
MW=                 1666
Mn=                  284
MW/Mn=            5.8652
Mz=                 4056
Mv=                 1451
```

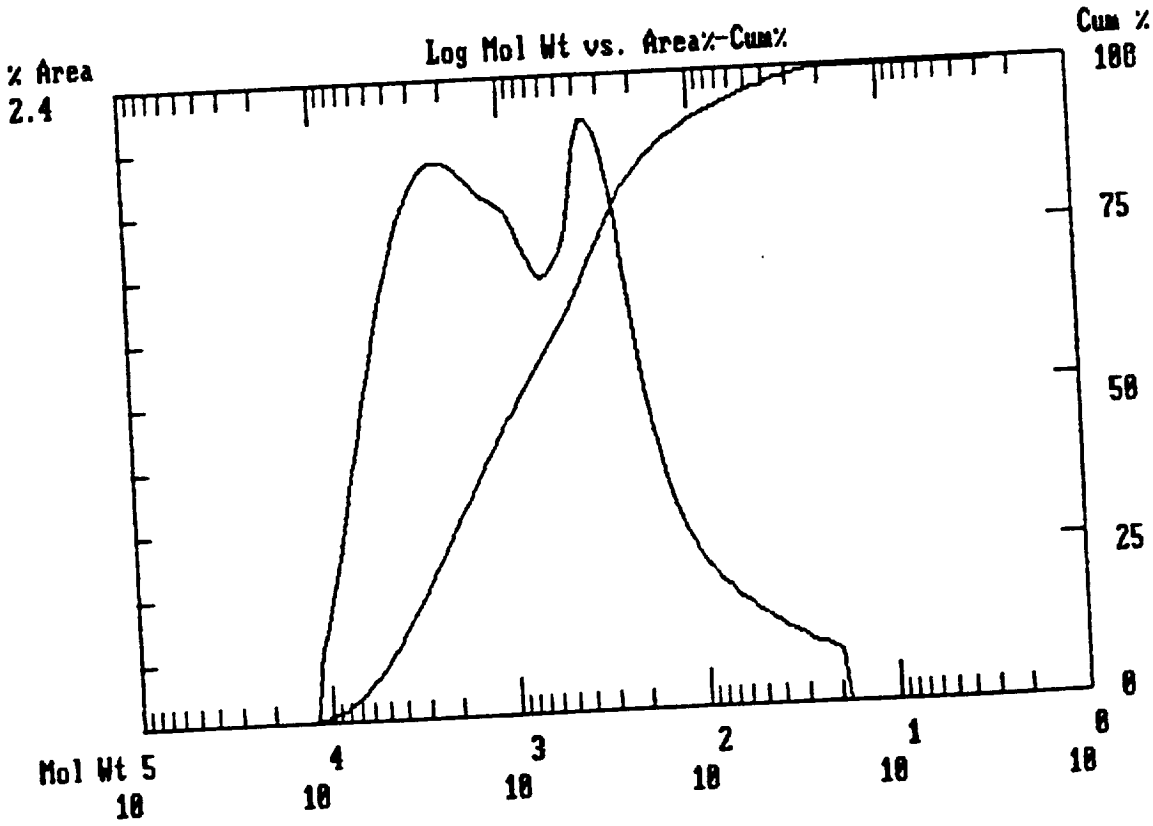

CHART 10B

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OF POOR QUALITY

A FILE B:GPC23 .HDR TAKEN 08-05-1986 17:31:38

********** GPC REPORT **********

```
**********************************************************************
: mple Name: 91LD 3-2 C=2.68                Operator Initials: GBF      *
 te: 08-05-1986 12:14:53 Method:            DATA FILE: B:GPC23   .PTS   *
Interface: 5                  Cycle#:  23   Channel#: 0   Vial#: N.A.   *
Starting Peak Width:  60      Threshold:  0                             *
**********************************************************************
Instrument Type: HPLC/BECKMAN               Column Type: ULTRASTYRAGEL 500A *
          Solvent Description: THF                                      *
  Operating Conditions: T=35C FLOWRATE=2.0ML/MIN   Detector 1:          *
          Detector 0: 254NM/.1AU                                        *
    Misc. Information: CALIBRATION/GPC                                  *
**********************************************************************
                                        Ending Retention Time:   10.00
rting Delay:    0.00
Calibration file: GPCPHEN                                          2
olecular Weight Distribution Averages   MW:      22295 to          2
seline TIMES:    3.85 to   10.00        MW:      22295 to
ocess .TIMES:    3.85 to   10.00
otal Area:        251238
                    1751
=                    322
=                 5.4277
w/Mn=                4258
-=                   1527
=
```

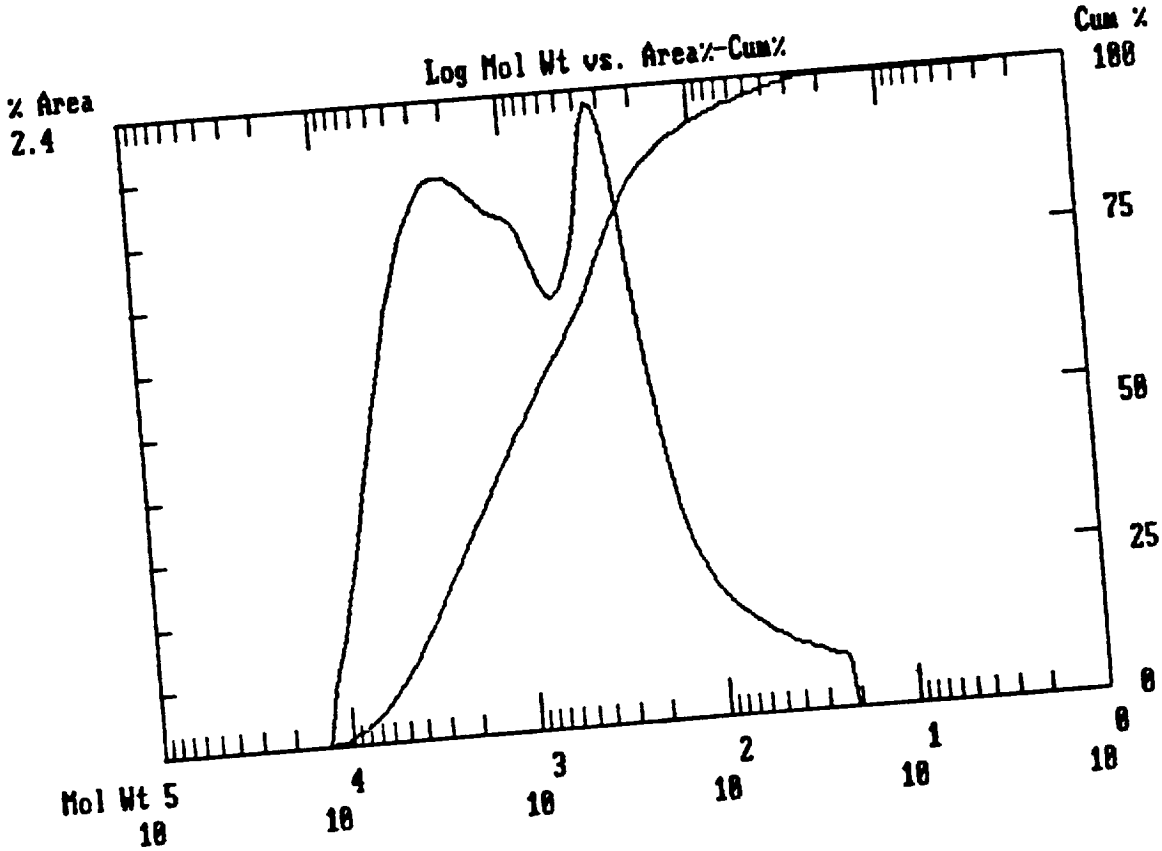


CHART 10C

ORIGINAL PAGE IS
OF POOR QUALITY

FILE B:GPC24 .HDR TAKEN 08-05-1986 17:34:48

******** GPC REPORT ********

Sample Name: 91LD 3-3 C=2.68
Operator Initials: GBF
Date: 08-05-1986 12:29:38 Method:
DATA FILE: B:GPC24 .PTS
Cycle#: 24
Channel#: 0 Vial#: N.A.
Interface: 5
Starting Peak Width: 60 Threshold: 0

Instrument Type: HPLC/BECKMAN
Column Type: ULTRASTYRAGEL 500A
Solvent Description: THF
Operating Conditions: T=35C FLOWRATE=2.0ML/MIN
Detector 0: 254NM/.1AU
Detector 1:
Misc. Information: CALIBRATION/GPC

Starting Delay: 0.00
Ending Retention Time: 10.00
Calibration file: GPCPHEN
Molecular Weight Distribution Averages

Baseline TIMES:	3.85 to	10.00	MW:	22295 to	2
Process TIMES:	3.85 to	10.00	MW:	22295 to	2
Total Area:	243393				
Mw=	1838				
Mn=	369				
Mw/Mn=	4.9751				
Mz=	4370				
Mv=	1608				

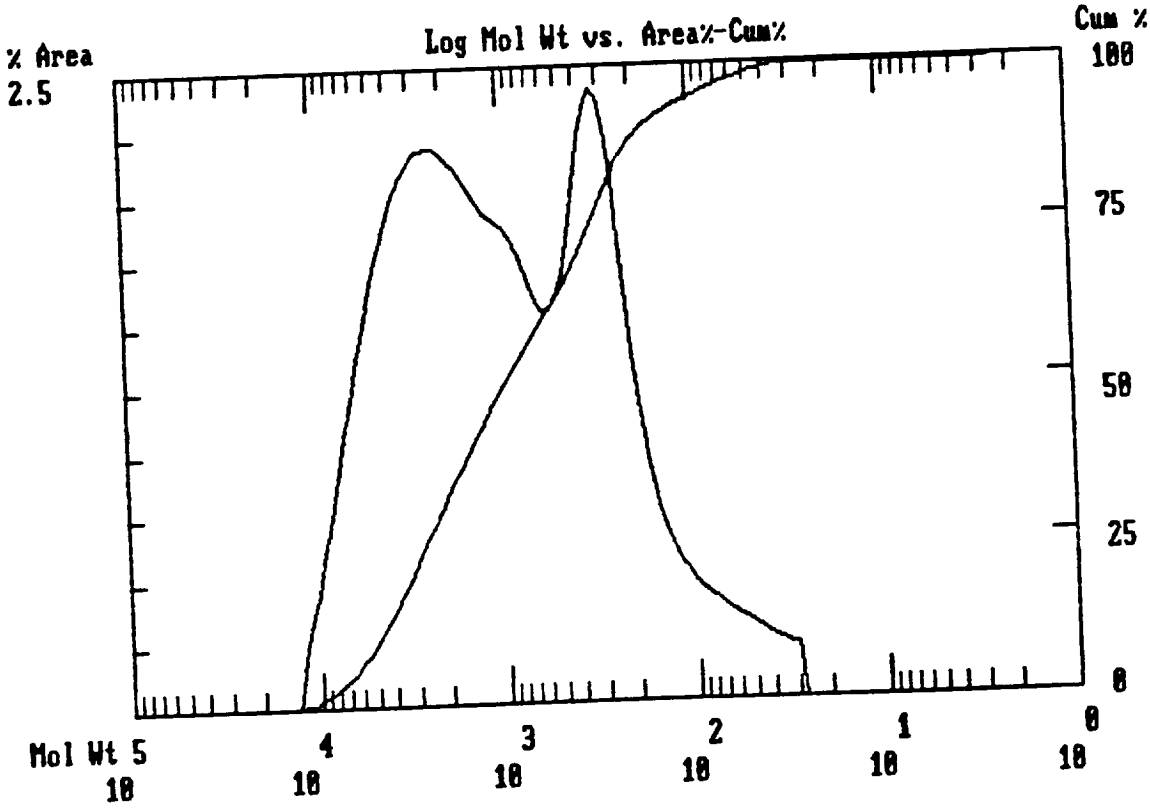
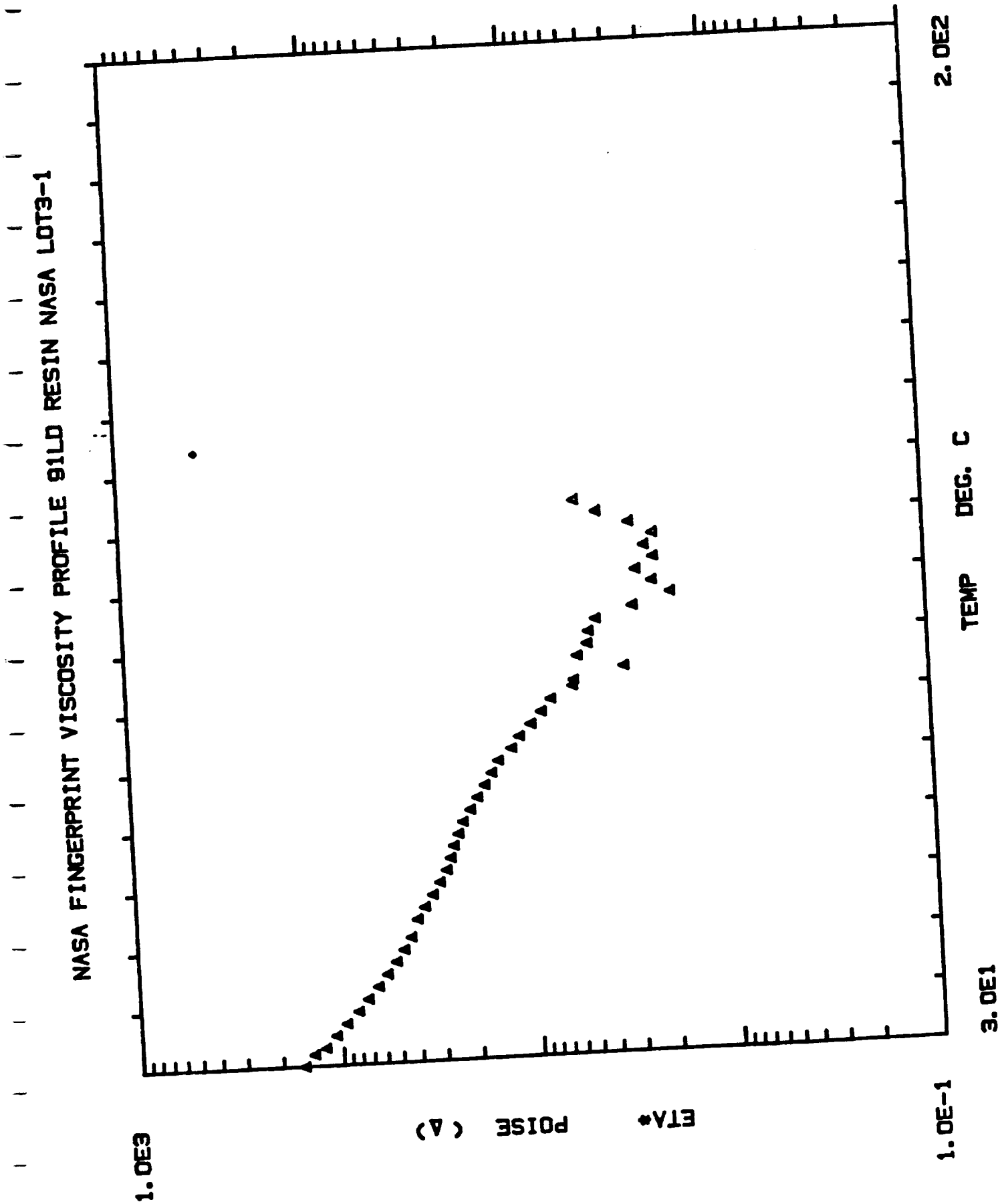


CHART 14A


NASA FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LOT3-1
ETA* POISE (A)
1.0E3
1.0E-1
TEMP DEG. C
2.0E2
3.0E1

Rheometrics RECAP II

eriment No. : 15 Sample No. : 1

le:
A FINGERPRINT VISCOSITY PROFILE 9ILD RESIN NASA 1013-1

erator :CF

e end Time : Wednesday, August 20, 1986 - 10:16:33

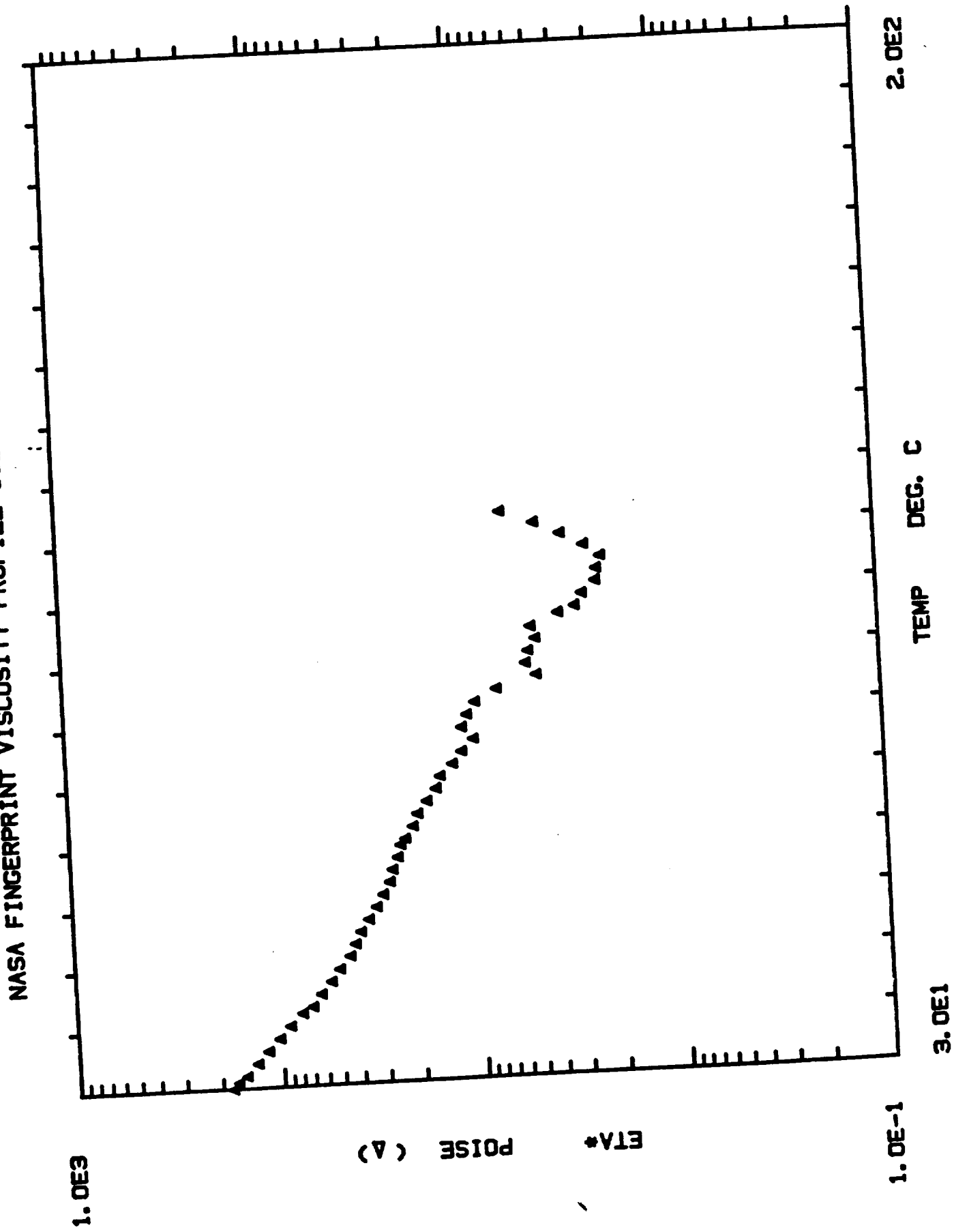
rating Mode : DYNAMIC

eep Type : CURE

ometry : DISK & PLATE
RADIUS : 25.00
GAP : 0.50

otes :
TRAIN =50%
EQUENCY =10RAD/SEC

	ETA* POISE	ETA' POISE	ETA" POISE	TORQUE GRAMS-CM	TIME MIN.	TEMP DEG. C
	1.807e+002	1.753e+002	4.413e+001	2.264e+001	2.000e-001	2.700e+001
2	1.686e+002	1.639e+002	3.980e+001	2.113e+001	1.000e+000	2.800e+001
3	1.529e+002	1.483e+002	3.713e+001	1.914e+001	2.000e+000	3.000e+001
4	1.359e+002	1.312e+002	3.551e+001	1.703e+001	3.000e+000	3.200e+001
5	1.190e+002	1.141e+002	3.386e+001	1.491e+001	4.000e+000	3.300e+001
6	1.048e+002	9.925e+001	3.352e+001	1.312e+001	5.000e+000	3.500e+001
7	9.230e+001	8.629e+001	3.275e+001	1.157e+001	6.000e+000	3.700e+001
8	8.016e+001	7.380e+001	3.130e+001	1.004e+001	7.000e+000	3.900e+001
9	7.122e+001	6.450e+001	3.020e+001	8.925e+000	8.000e+000	4.100e+001
10	6.291e+001	5.591e+001	2.886e+001	7.886e+000	9.000e+000	4.300e+001
11	5.630e+001	4.901e+001	2.771e+001	7.050e+000	1.000e+001	4.500e+001
12	5.041e+001	4.273e+001	2.675e+001	6.322e+000	1.100e+001	4.700e+001
13	4.588e+001	3.772e+001	2.612e+001	5.749e+000	1.200e+001	4.900e+001
14	4.195e+001	3.351e+001	2.524e+001	5.259e+000	1.300e+001	5.100e+001
15	3.873e+001	2.998e+001	2.453e+001	4.851e+000	1.400e+001	5.400e+001
16	3.532e+001	2.682e+001	2.299e+001	4.427e+000	1.500e+001	5.600e+001
17	3.208e+001	2.447e+001	2.075e+001	4.018e+000	1.600e+001	5.800e+001
18	2.935e+001	2.238e+001	1.898e+001	3.678e+000	1.700e+001	6.000e+001
19	2.697e+001	2.103e+001	1.689e+001	3.377e+000	1.800e+001	6.200e+001
20	2.559e+001	2.033e+001	1.554e+001	3.206e+000	1.900e+001	6.400e+001
21	2.449e+001	1.996e+001	1.420e+001	3.066e+000	2.000e+001	6.600e+001
22	2.308e+001	1.940e+001	1.250e+001	2.892e+000	2.100e+001	6.800e+001
23	2.176e+001	1.895e+001	1.070e+001	2.725e+000	2.200e+001	7.000e+001
24	1.990e+001	1.809e+001	8.286e+000	2.495e+000	2.300e+001	7.200e+001
25	1.822e+001	1.684e+001	6.946e+000	2.282e+000	2.400e+001	7.400e+001
26	1.667e+001	1.564e+001	5.770e+000	2.090e+000	2.500e+001	7.600e+001
27	1.525e+001	1.438e+001	5.067e+000	1.912e+000	2.600e+001	7.800e+001
28	1.407e+001	1.344e+001	4.138e+000	1.765e+000	2.700e+001	8.000e+001
29	1.203e+001	1.150e+001	3.531e+000	1.510e+000	2.800e+001	8.200e+001
30	1.090e+001	1.050e+001	2.956e+000	1.368e+000	2.900e+001	8.400e+001
31	9.522e+000	9.150e+000	2.635e+000	1.195e+000	3.000e+001	8.600e+001
32	8.399e+000	8.037e+000	2.438e+000	1.053e+000	3.100e+001	8.800e+001
33	7.470e+000	7.220e+000	1.916e+000	9.374e-001	3.200e+001	9.000e+001
34	5.769e+000	5.583e+000	1.451e+000	7.239e-001	3.300e+001	9.200e+001
35	5.678e+000	5.498e+000	1.418e+000	7.128e-001	3.400e+001	9.300e+001
36	3.158e+000	3.134e+000	3.857e-001	3.962e-001	3.500e+001	9.500e+001
37	5.398e+000	5.333e+000	8.347e-001	6.773e-001	3.600e+001	9.700e+001
38	4.775e+000	4.669e+000	9.992e-001	5.985e-001	3.700e+001	9.900e+001
39	4.679e+000	4.642e+000	5.860e-001	5.865e-001	3.800e+001	1.010e+002
40	4.276e+000	4.182e+000	8.925e-001	5.366e-001	3.900e+001	1.030e+002
41	2.767e+000	2.754e+000	2.753e-001	3.472e-001	4.000e+001	1.050e+002
42	1.787e+000	1.631e+000	7.296e-001	2.244e-001	4.100e+001	1.070e+002
43	2.198e+000	2.135e+000	5.214e-001	2.759e-001	4.200e+001	1.090e+002
44	2.635e+000	2.620e+000	2.782e-001	3.309e-001	4.300e+001	1.110e+002
45	2.138e+000	2.138e+000	5.196e-002	2.683e-001	4.400e+001	1.130e+002
46	2.367e+000	2.254e+000	7.212e-001	2.970e-001	4.500e+001	1.150e+002
47	2.131e+000	2.032e+000	6.398e-001	2.675e-001	4.600e+001	1.170e+002
48	2.789e+000	2.539e+000	1.154e+000	3.499e-001	4.700e+001	1.190e+002
49	4.053e+000	3.849e+000	1.271e+000	5.086e-001	4.800e+001	1.210e+002
50	5.206e+000	4.692e+000	2.255e+000	6.526e-001	4.900e+001	1.230e+002


NASA FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LOT3-2
ETA* POISE (A)
1.0E3
1.0E-1
TEMP DEG. C
2.0E2
3.0E1

Rheometrics RECAP II

iment No. : 16 Sample No. : 1

e:
FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LOT3-2

ator :CP

and Time : Wednesday, August 20, 1986 11:46:31

ating Mode : DYNAMIC

Type : CURE

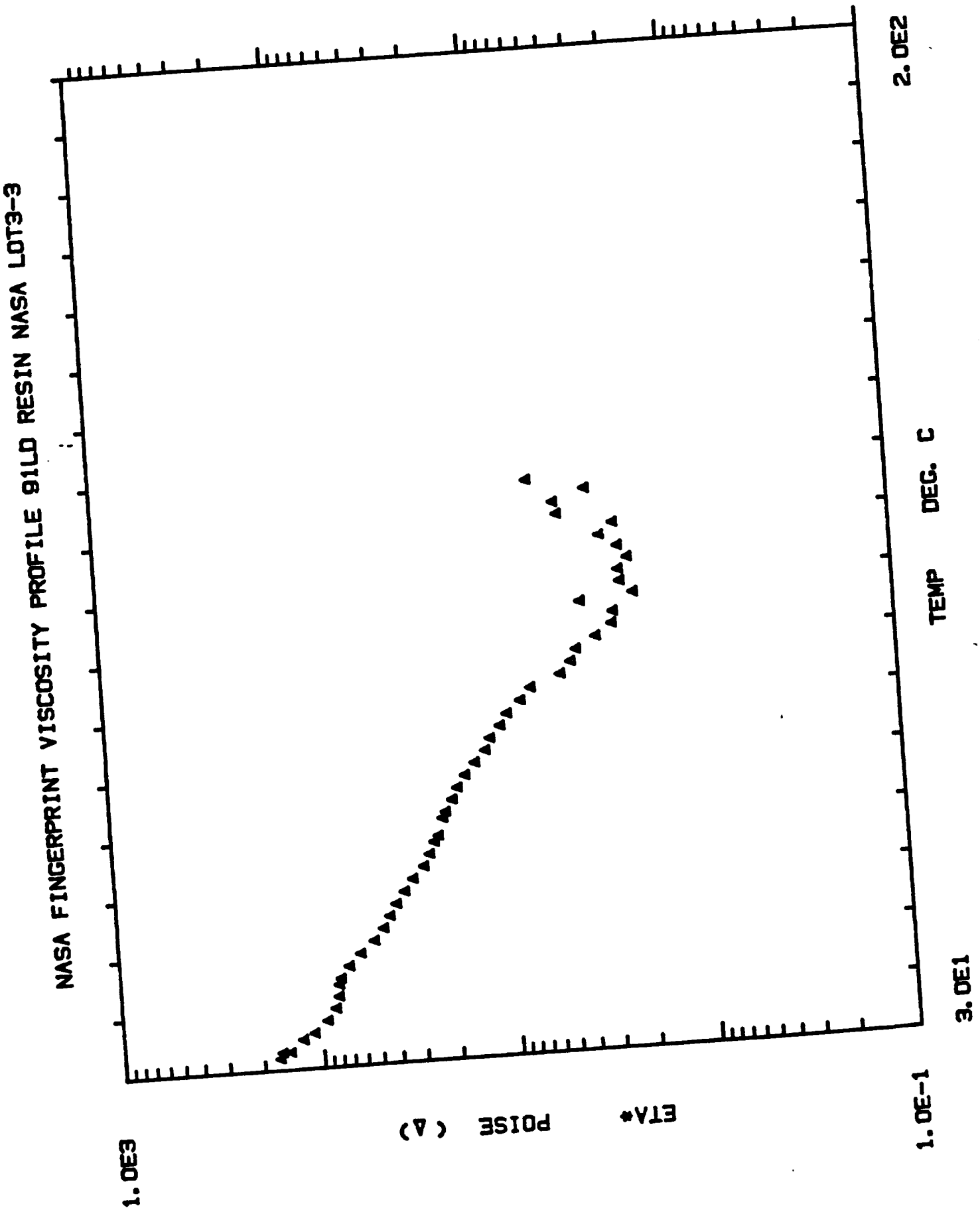
try : DISK & PLATE
RADIUS : 25.00
GAP : 0.50

:
IN =50%
JENCY =10RAD/SEC

54 FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LOTS

NO.	ETA* POISE	ETA' POISE	ETA" POISE	TORQUE GRAMS-CM	TIME MIN.	TEMP DEG. C
1	1.750e+002	1.698e+002	4.214e+001	2.197e+001	2.000e-001	3.000e+001
2	1.643e+002	1.595e+002	3.929e+001	2.063e+001	1.000e+000	3.100e+001
3	1.486e+002	1.439e+002	3.709e+001	1.864e+001	2.000e+000	3.200e+001
4	1.307e+002	1.261e+002	3.441e+001	1.639e+001	3.000e+000	3.400e+001
5	1.152e+002	1.101e+002	3.403e+001	1.447e+001	4.000e+000	3.600e+001
6	1.008e+002	9.513e+001	3.343e+001	1.264e+001	5.000e+000	3.800e+001
7	8.867e+001	8.240e+001	3.277e+001	1.113e+001	6.000e+000	4.000e+001
8	7.711e+001	7.047e+001	3.130e+001	9.671e+000	7.000e+000	4.200e+001
9	6.830e+001	6.112e+001	3.048e+001	8.565e+000	8.000e+000	4.300e+001
10	6.164e+001	5.408e+001	2.958e+001	7.734e+000	9.000e+000	4.500e+001
11	5.460e+001	4.642e+001	2.875e+001	6.846e+000	1.000e+001	4.700e+001
12	4.943e+001	4.103e+001	2.755e+001	6.199e+000	1.100e+001	4.900e+001
13	4.357e+001	3.486e+001	2.613e+001	5.462e+000	1.200e+001	5.100e+001
14	4.084e+001	3.195e+001	2.543e+001	5.120e+000	1.300e+001	5.300e+001
15	3.825e+001	2.922e+001	2.468e+001	4.795e+000	1.400e+001	5.500e+001
16	3.460e+001	2.609e+001	2.272e+001	4.340e+000	1.500e+001	5.700e+001
17	3.154e+001	2.377e+001	2.072e+001	3.951e+000	1.600e+001	5.900e+001
18	2.914e+001	2.206e+001	1.904e+001	3.651e+000	1.700e+001	6.100e+001
19	2.687e+001	2.077e+001	1.705e+001	3.369e+000	1.800e+001	6.300e+001
20	2.587e+001	2.040e+001	1.591e+001	3.241e+000	1.900e+001	6.500e+001
21	2.422e+001	1.963e+001	1.419e+001	3.037e+000	2.000e+001	6.700e+001
22	2.338e+001	1.943e+001	1.300e+001	2.930e+000	2.100e+001	6.900e+001
23	2.207e+001	1.895e+001	1.130e+001	2.767e+000	2.200e+001	7.000e+001
24	2.007e+001	1.755e+001	9.736e+000	2.515e+000	2.300e+001	7.200e+001
25	1.897e+001	1.690e+001	8.606e+000	2.380e+000	2.400e+001	7.400e+001
26	1.696e+001	1.557e+001	6.724e+000	2.127e+000	2.500e+001	7.600e+001
27	1.521e+001	1.426e+001	5.293e+000	1.910e+000	2.600e+001	7.800e+001
28	1.444e+001	1.344e+001	5.284e+000	1.812e+000	2.700e+001	8.000e+001
29	1.248e+001	1.173e+001	4.278e+000	1.567e+000	2.800e+001	8.200e+001
30	1.118e+001	1.063e+001	3.477e+000	1.404e+000	2.900e+001	8.400e+001
31	9.738e+000	9.302e+000	2.879e+000	1.222e+000	3.000e+001	8.600e+001
32	1.107e+001	1.070e+001	2.823e+000	1.390e+000	3.100e+001	8.800e+001
33	1.038e+001	9.901e+000	3.117e+000	1.302e+000	3.200e+001	9.000e+001
34	9.424e+000	9.087e+000	2.495e+000	1.183e+000	3.300e+001	9.200e+001
35	7.320e+000	7.208e+000	1.276e+000	9.191e-001	3.400e+001	9.400e+001
36	4.630e+000	4.559e+000	8.080e-001	5.807e-001	3.500e+001	9.600e+001
37	5.220e+000	5.203e+000	4.206e-001	6.553e-001	3.600e+001	9.800e+001
38	5.032e+000	4.930e+000	1.008e+000	6.311e-001	3.700e+001	1.000e+002
39	4.606e+000	4.484e+000	1.052e+000	5.779e-001	3.800e+001	1.020e+002
40	4.843e+000	4.770e+000	8.349e-001	6.074e-001	3.900e+001	1.040e+002
41	3.510e+000	3.502e+000	2.337e-001	4.402e-001	4.000e+001	1.060e+002
42	2.902e+000	2.853e+000	5.302e-001	3.638e-001	4.100e+001	1.070e+002
43	2.663e+000	2.543e+000	7.924e-001	3.339e-001	4.200e+001	1.090e+002
44	2.271e+000	2.147e+000	7.413e-001	2.845e-001	4.300e+001	1.110e+002
45	2.235e+000	1.835e+000	1.276e+000	2.801e-001	4.400e+001	1.130e+002
46	2.124e+000	1.383e+000	1.612e+000	2.659e-001	4.500e+001	1.150e+002
47	2.549e+000	2.370e+000	9.395e-001	3.196e-001	4.600e+001	1.170e+002
48	3.300e+000	2.833e+000	1.691e+000	4.142e-001	4.700e+001	1.190e+002
49	4.442e+000	3.945e+000	2.042e+000	5.573e-001	4.800e+001	1.210e+002
50	6.473e+000	6.061e+000	2.272e+000	8.129e-001	4.900e+001	1.230e+002

CHART 14C


NASA FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LOT3-3
1.0E3
ETA* POISE (A)
1.0E-1
3.0E1
TEMP DEG. C
2.0E2

Rheometrics RECAP II

riment No. : 17 Sample No. : 1

le:
FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LOT3-3

rator =CP

and Time : Wednesday, August 20, 1986 13:21:49

rating Mode : DYNAMIC

ep Type : CURE

metry : DISK & PLATE
RADIUS : 25.00
GAP : 0.50

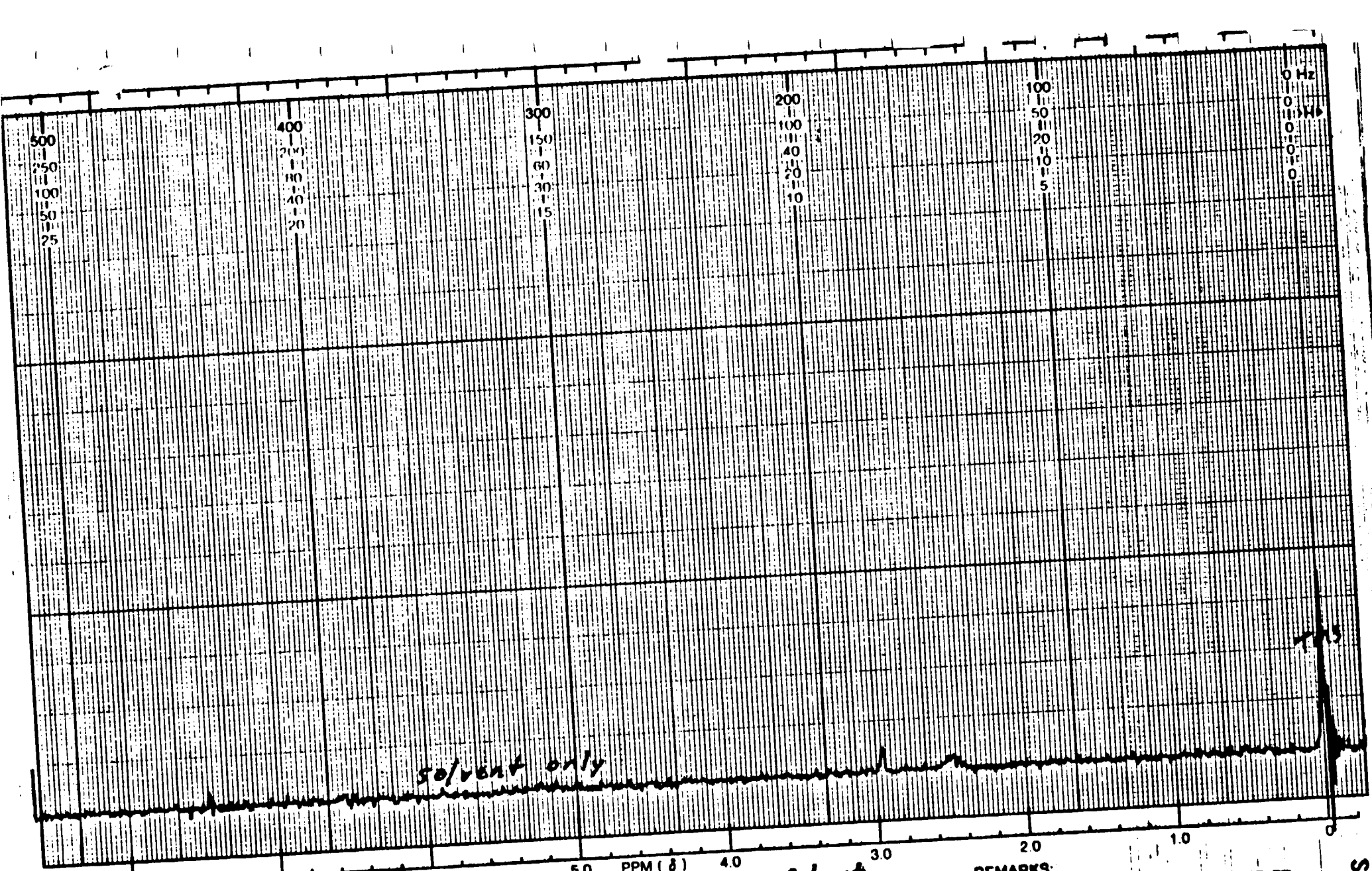
ces :
RAIN =50%
QUENCY =10 RAD/SEC

FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA 1413-3

	ETA* POISE	ETA' POISE	ETA" POISE	TORQUE GRAMS-CM	TIME MIN.	TEMP DEG. C
	1.618e+002	1.588e+002	3.110e+001	2.033e+001	2.000e-001	3.300e+001
	1.672e+002	1.637e+002	3.380e+001	2.100e+001	1.000e+000	3.200e+001
	1.478e+002	1.458e+002	2.440e+001	1.857e+001	2.000e+000	3.300e+001
	1.265e+002	1.252e+002	1.824e+001	1.588e+001	3.000e+000	3.500e+001
	1.105e+002	1.093e+002	1.647e+001	1.387e+001	4.000e+000	3.600e+001
	9.431e+001	9.323e+001	1.425e+001	1.184e+001	5.000e+000	3.800e+001
	8.468e+001	8.322e+001	1.570e+001	1.064e+001	6.000e+000	4.000e+001
	8.108e+001	7.853e+001	2.018e+001	1.018e+001	7.000e+000	4.200e+001
	8.018e+001	7.575e+001	2.628e+001	1.007e+001	8.000e+000	4.400e+001
	7.819e+001	7.228e+001	2.982e+001	9.816e+000	9.000e+000	4.500e+001
	7.045e+001	6.338e+001	3.078e+001	8.848e+000	1.000e+001	4.700e+001
	6.104e+001	5.332e+001	2.971e+001	7.662e+000	1.100e+001	4.900e+001
	5.157e+001	4.361e+001	2.754e+001	6.478e+000	1.200e+001	5.100e+001
	4.594e+001	3.814e+001	2.560e+001	5.765e+000	1.300e+001	5.300e+001
	4.231e+001	3.447e+001	2.452e+001	5.313e+000	1.400e+001	5.500e+001
	3.889e+001	3.108e+001	2.337e+001	4.881e+000	1.500e+001	5.700e+001
	3.506e+001	2.743e+001	2.184e+001	4.402e+000	1.600e+001	5.900e+001
	3.154e+001	2.471e+001	1.959e+001	3.962e+000	1.700e+001	6.100e+001
	2.753e+001	2.178e+001	1.684e+001	3.456e+000	1.800e+001	6.300e+001
	2.550e+001	2.072e+001	1.486e+001	3.202e+000	1.900e+001	6.500e+001
	2.394e+001	1.982e+001	1.343e+001	3.004e+000	2.000e+001	6.700e+001
	2.274e+001	1.967e+001	1.140e+001	2.854e+000	2.100e+001	6.800e+001
	2.140e+001	1.848e+001	1.078e+001	2.685e+000	2.200e+001	7.100e+001
	2.057e+001	1.829e+001	9.422e+000	2.582e+000	2.300e+001	7.200e+001
	1.891e+001	1.726e+001	7.724e+000	2.376e+000	2.400e+001	7.400e+001
	1.763e+001	1.628e+001	6.775e+000	2.214e+000	2.500e+001	7.600e+001
	1.601e+001	1.509e+001	5.365e+000	2.012e+000	2.600e+001	7.800e+001
	1.417e+001	1.331e+001	4.871e+000	1.779e+000	2.700e+001	8.000e+001
	1.245e+001	1.186e+001	3.806e+000	1.564e+000	2.800e+001	8.200e+001
	1.168e+001	1.117e+001	3.399e+000	1.465e+000	2.900e+001	8.400e+001
	1.032e+001	9.922e+000	2.823e+000	1.296e+000	3.000e+001	8.600e+001
	9.434e+000	9.276e+000	1.721e+000	1.186e+000	3.100e+001	8.800e+001
	7.995e+000	7.814e+000	1.691e+000	1.005e+000	3.200e+001	9.000e+001
	7.045e+000	6.916e+000	1.343e+000	8.844e-001	3.300e+001	9.200e+001
	4.942e+000	4.887e+000	7.392e-001	6.199e-001	3.400e+001	9.400e+001
	4.341e+000	4.251e+000	8.808e-001	5.449e-001	3.500e+001	9.600e+001
	4.037e+000	3.885e+000	1.096e+000	5.067e-001	3.600e+001	9.800e+001
	3.181e+000	3.043e+000	9.275e-001	3.996e-001	3.700e+001	1.000e+002
	2.623e+000	2.571e+000	5.188e-001	3.294e-001	3.800e+001	1.020e+002
	2.561e+000	2.467e+000	6.893e-001	3.219e-001	3.900e+001	1.040e+002
	3.734e+000	3.647e+000	8.011e-001	4.688e-001	4.000e+001	1.060e+002
	2.005e+000	1.778e+000	9.256e-001	2.518e-001	4.100e+001	1.070e+002
	2.323e+000	2.209e+000	7.162e-001	2.921e-001	4.200e+001	1.090e+002
	2.343e+000	2.251e+000	6.491e-001	2.945e-001	4.300e+001	1.110e+002
	2.096e+000	1.745e+000	1.162e+000	2.636e-001	4.400e+001	1.130e+002
	2.325e+000	2.206e+000	7.362e-001	2.922e-001	4.500e+001	1.150e+002
	2.853e+000	2.674e+000	9.930e-001	3.586e-001	4.600e+001	1.170e+002
	2.416e+000	2.105e+000	1.185e+000	3.035e-001	4.700e+001	1.190e+002
	4.607e+000	4.346e+000	1.530e+000	5.792e-001	4.800e+001	1.210e+002
	4.769e+000	4.631e+000	1.139e+000	5.993e-001	4.900e+001	1.230e+002

FINGERPRINT VISCOSITY PROFILE 91LD RESIN NASA LOTS-3

ETA* POISE	ETA' POISE	ETA" POISE	TORQUE GRAMS-CM	TIME MIN.	TEMP DEG. C
3.263e+000	3.117e+000	9.647e-001	4.097e-001	5.000e+001	1.250e+002
6.407e+000	5.688e+000	2.950e+000	8.050e-001	5.100e+001	1.270e+002



SWEEP OFFSET (Hz): 0
SPECTRUM AMPLITUDE: 8.0
INTEGRAL AMPLITUDE: —
SPINNING RATE (RPS): 30

MANUAL
SWEEP TIME (SEC): 50 250 500 1000
SWEEP WIDTH (Hz): 25 50 100 250 500
FILTER: 1 2 3 4 5 6 7 8
RF POWER LEVEL: 0.30

AUTO ☐
(250)
(500)
(2)
(.05)

SAMPLE: Solvent
SOLVENT: Unisol-d + 0.82 TMS
DEC. LEVEL

REMARKS:

ORIGINAL PAGE IS
OF POOR QUALITY

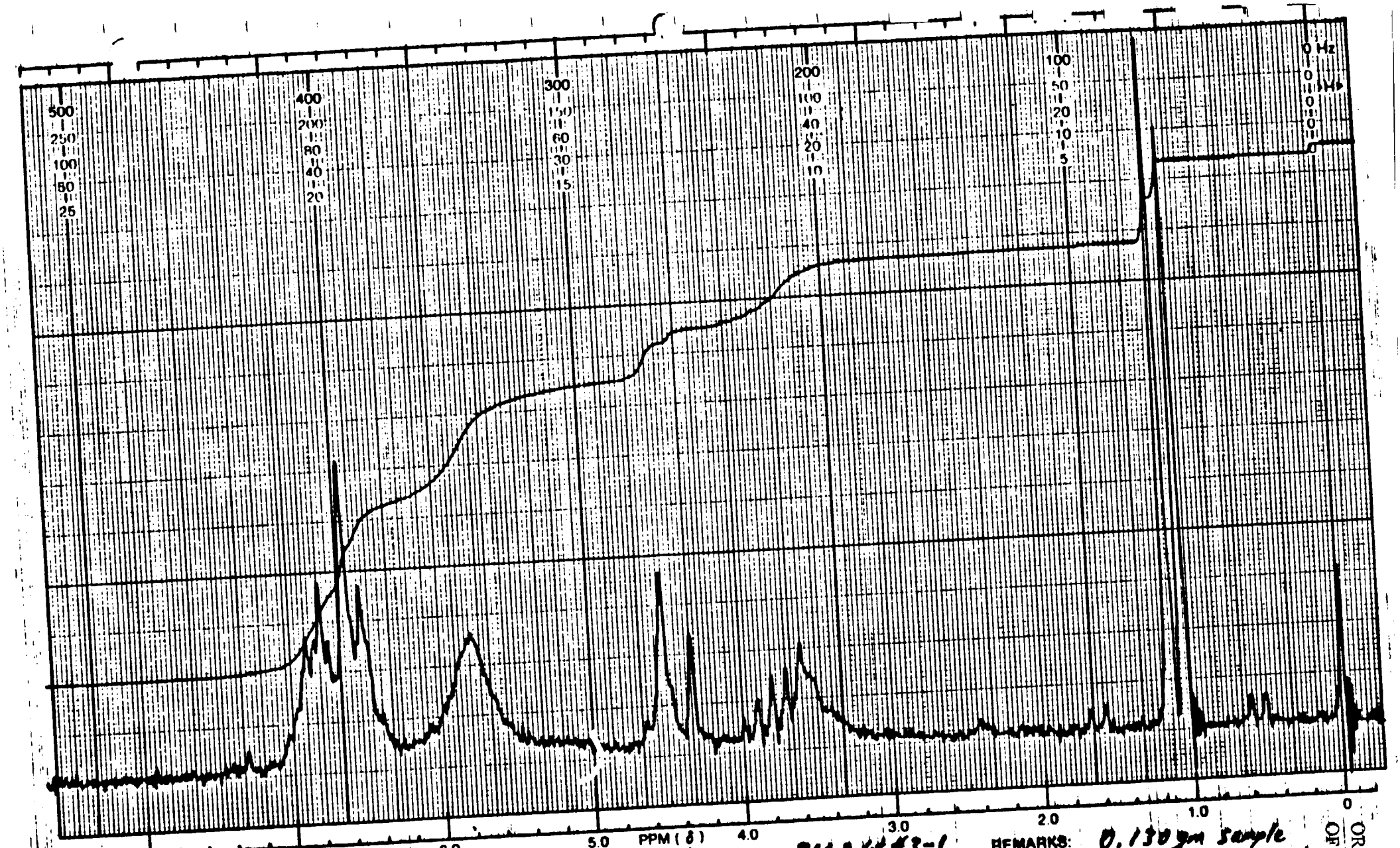
SOLVENT ONLY SCAN

DATE: 3-21-86

OPERATOR DGW

SPECTRUM NO. 1A of 7
solvent scan

NORELL, INC.
LANDISVILLE, N.J. 08326



SWEEP OFFSET (Hz): 0
SPECTRUM AMPLITUDE: 8.0
INTEGRAL AMPLITUDE: 5.0
SPINNING RATE (RPS): 30

MANUAL
SWEEP TIME (SEC): 50 250 500 1000
SWEEP WIDTH (Hz): 25 50 100 250 500
FILTER: 1 2 3 4 5 6 7 8
RF POWER LEVEL: 0.25

AUTO ☐
(250)
(500)
(2)
(.05)

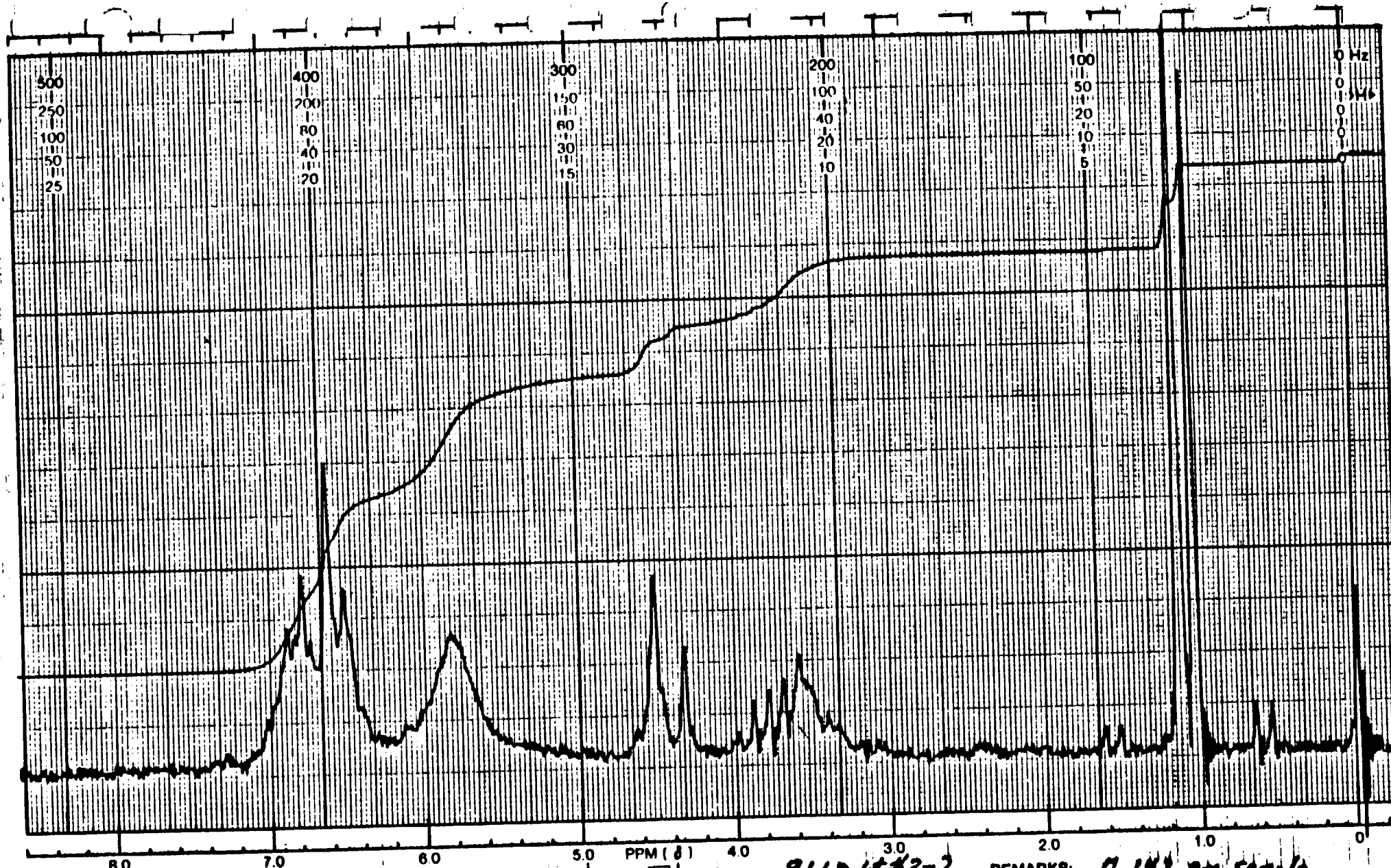
SAMPLE: 91LD Lot #3-1
SOLVENT: Unisol-d + 0.5% TMS
DEC. LEVEL

REMARKS: 0.130 gm sample
0.896 gm solvent

DATE: 3-21-86
OPERATOR DGW
SPECTRUM NO. 7 of 9 91LD Lot #3-1

NORELL, INC.
LANDISVILLE, N.J. 08326
(609) 697-0020

ORIGINAL PAGE IS OF POOR QUALITY



SWEEP OFFSET (Hz): 0
SPECTRUM AMPLITUDE: 8.0
INTEGRAL AMPLITUDE: 5.0
SPINNING RATE (RPS): 30

MANUAL
SWEEP TIME (SEC): 50 250 500 1000
SWEEP WIDTH (Hz): 25 50 100 250 500
FILTER: 1 2 3 4 5 6 7 8
RF POWER LEVEL: 0.25

AUTO ☐
(250)
(500)
(2)
(.05)

SAMPLE: 9ILD Lot#3-2
SOLVENT: Unisol-d +0.5% TMS
DEC. LEVEL

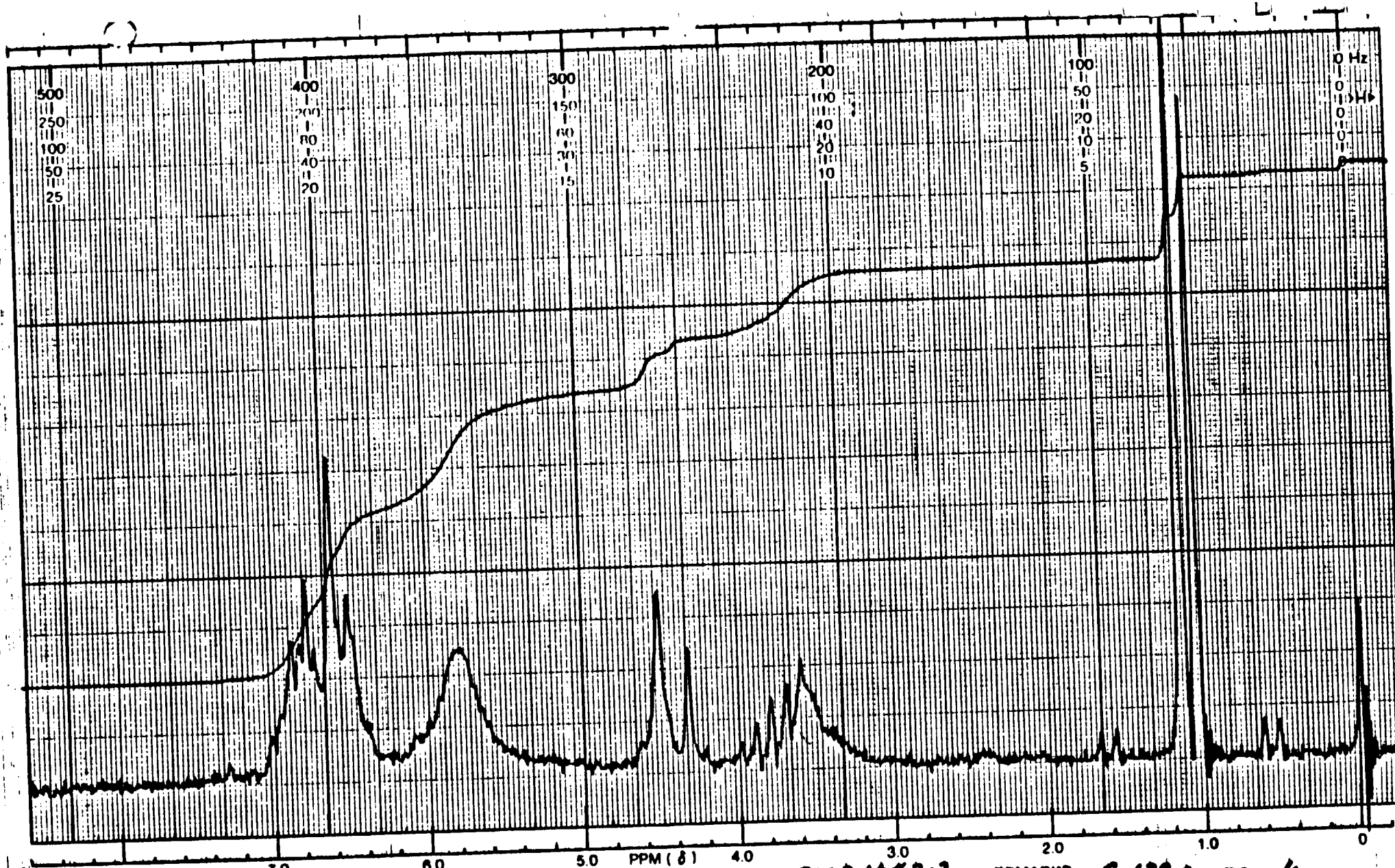
REMARKS: 0.142 gm sample
0.948 gm solvent

DATE: 3-21-86
OPERATOR DGW
SPECTRUM NO. 8 of 9 9ILD Lot#3-2

NORELL, INC.
LANDISVILLE, N.J. 08326
T60 Phone: (609) 697-0020

ORIGINAL PAGE IS OF POOR QUALITY

CHART 15B



SWEEP OFFSET (Hz): 0
SPECTRUM AMPLITUDE: 8.0
INTEGRAL AMPLITUDE: 5.0
SPINNING RATE (RPS): 20

MANUAL
SWEEP TIME (SEC): 50 250 500 1000
SWEEP WIDTH (Hz): 25 50 100 250 500
FILTER: 1 2 3 4 5 6 7 8
RF POWER LEVEL: 0.25

AUTO ☐
(250)
(500)
(2)
(.05)

SAMPLE: 91CD Lt #3-3
SOLVENT: Unisol-d+0.52TMS
DEC. LEVEL

REMARKS: 0.139 gm sample
0.944 gm solvent

ORIGINAL PAGE IS
OF POOR QUALITY

DATE: 3-21-86

OPERATOR DEW

SPECTRUM NO. 9 of 9 91CD
Lt #3-3

CHART 15C

NORELL, INC.
LANDISVILLE, N.J. 08326
T60 Phone: (609) 697-0020

TABLE OF CONTENTS

FABRIC TESTING

NAS8-36298

U.S. Polymeric O.E. 71108

CCA-3 Fabric for NASA Lot# 3

CHARTS

U.S. Polymeric

FABRIC TESTING

NAS8-36298

U.S. POLYMERIC O.E. 71108

CCA-3 Fabric for NASA Lot# 3

1a. Breaking Strength, lbs/in, WARP
ASTM D1682

	#3-1S	#3-1E	#3-2S	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
PICK	31	30	38	32	39	38	34	38	36	47	42	45	37.5
CENTER	32	32	32	30	36	39	31	35	30	38	33	37	33.8
PLAIN	37	31	35	31	46	36	36	38	37	48	31	34	36.7
AVG.	33.3	31.0	35.0	31.0	40.3	37.7	33.7	37.0	34.3	44.3	35.3	38.7	36.0

1b. Breaking Strength, lbs/in, FILL
ASTM D1682

	#3-1S	#3-1E	#3-2S	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
PICK	14	31	30	32	37	34	29	27	18	32	52	43	31.6
CENTER	19	31	27	28	28	27	30	34	19	34	44	42	30.3
PLAIN	18	31	28	29	30	27	24	34	19	33	41	42	29.7
AVG.	17.0	31.0	28.3	29.7	31.7	29.3	27.7	31.7	18.7	33.0	45.7	42.3	30.5

2a. Carbon Assay, %
MDQAI 5560

	#3-1S	#3-1E	#3-2S	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E
PICK	96.8	96.5	96.6	96.7	96.6	97.3	97.2	96.5
CENTER	96.0	97.1	96.8	96.8	96.8	97.2	96.9	96.4
PLAIN	97.1	97.2	96.6	96.5	96.6	96.8	96.8	95.9
AVG.	96.63	96.93	96.67	96.67	96.67	97.10	96.97	96.27

HITCO MATERIALS DIVISION
700 E. DYER ROAD, SANTA ANA, CALIFORNIA 92707 • (714) 549-1101 • TWX (910) 595-1130 • FAX # (714) 549-2858-5-2437

CCA-3 Fabric for NASA Lot# 3

2a. Carbon Assay, % (CONTINUED)
MDQAI 5560

	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
PICK	96.4	95.7	96.6	96.1	96.58
CENTER	95.9	96.1	96.4	96.0	96.53
PLAIN	96.6	96.7	96.7	95.8	96.61
AVG.	96.30	96.17	96.57	95.97	96.58

2b. Hydrogen Assay, %
MDQAI 5560

	#3-1S	#3-1E	#3-2S
PICK	.18	.19	.13
CENTER	.16	.17	.15
PLAIN	.15	.15	.15
AVG.	.163	.170	.143

	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E
PICK	.13	.17	.16	.15	.15
CENTER	.14	.17	.15	.15	.15
PLAIN	.15	.17	.14	.16	.16
AVG.	.140	.170	.150	.153	.153

	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
PICK	.16	.14	.15	.13	.153
CENTER	.14	.16	.15	.15	.153
PLAIN	.14	.14	.15	.15	.151
AVG.	.147	.147	.150	.143	.153

2c. Nitrogen Assay, %
MDQAI 5560

	#3-1S	#3-1E	#3-2S
PICK	.7	.9	.8
CENTER	.7	.8	.8
PLAIN	.8	.8	.8
AVG.	.73	.83	.80

	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E
PICK	.9	.9	1.0	.8	.8
CENTER	.9	.9	1.0	.9	.8
PLAIN	.9	.8	.9	1.0	.8
AVG.	.90	.87	.97	.90	.80

	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
PICK	.9	.9	.9	.6	.84
CENTER	.8	.8	.9	.9	.85
PLAIN	.8	.8	.8	.8	.83
AVG.	.83	.83	.87	.77	.84

See Charts 3A-3F

3. Visual Inspection
QCi-102

4. Specific Gravity, Units
PTM-84

	#3-1S	#3-1E	#3-2S
	2.9910	2.7440	2.8734
	2.9888	2.5514	3.0339
	2.9062	2.6228	3.0715
AVG.	2.962	2.639	2.992

(NOTE: Results are not reliable due to surface activity)

CCA-3 Fabric for NASA Lot# 3

4. Specific Gravity, Units (CONTINUED)
PTM-84

	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E
	2.4989	2.3014	2.7607	2.6102	2.6355
	2.6106	2.1918	2.7008	2.6347	2.7418
	2.5835	2.2203	2.7294	2.5935	2.7169
AVG.	2.564	2.238	2.730	2.613	2.698

	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
	2.7068	3.0945	2.6413	2.6548	2.7094
	2.8036	2.9334	2.5773	2.4646	2.6861
	2.8107	2.9026	2.5808	2.5079	2.6872
AVG.	2.774	2.977	2.600	2.542	2.694

5. pH, Units
CTM-24B

	#3-1S	#3-1E	#3-2S
	7.5	7.2	7.7
	7.4	7.2	7.7
AVG.	7.45	7.20	7.70

	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E
	7.9	7.3	7.2	8.3	8.4
	7.8	7.3	7.1	8.2	8.2
AVG.	7.85	7.30	7.15	8.25	8.30

	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
	7.6	7.6	6.0	7.5	7.52
	7.6	7.5	6.0	7.5	7.46
AVG.	7.60	7.55	6.00	7.50	7.49

6. TGA, °C at 50% Weight Loss
CTM-51 (AIR)

SET UP #1	
3-1S	647
3-2S	647
3-3E	644
3-4E	651
3-5E	652
3-6E	649
AVG.	648

SET UP #2	
3-1E	593
3-2E	590
3-3S	585
3-4S	587
3-5S	585
3-6S	588
AVG.	588

See Charts 6A-6L

7a. Atomic Absorption, ppm
CTM-53B

	#3-1S	#3-1E	#3-2S
Na	395	357	325
K	40	39	26
Ca	11	10	5
Mg	40	58	38
Li	0	0	0
AVG.	486	464	394

	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E
Na	318	325	375	400	382
K	30	26	29	24	35
Ca	5	10	9	7	8
Mg	36	96	52	91	40
Li	0	0	0	0	0
AVG.	389	457	465	522	465

CCA-3 Fabric for NASA Lot# 3

7a. Atomic Absorption, ppm (CONTINUED)
CTM-53B

	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
Na	446	333	395	362	367.8
K	40	34	23	23	30.8
Ca	2	11	12	2	7.7
Mg	42	52	60	45	54.2
Li	0	0	0	0	0
AVG.	530	430	490	432	460.3

7b. Moisture Content, %
CTM-53B

#3-1S	7.188	#3-4S	6.811
#3-1E	6.762	#3-4E	6.491
#3-2S	7.021	#3-5S	6.609
#3-2E	7.001	#3-5E	6.618
#3-3S	6.846	#3-6S	6.741
#3-3E	6.724	#3-6E	6.428
		Lot# 3 AVERAGE	6.770

7c. Ash Content, %
CTM-53B

#3-1S	.115	#3-4S	.155
#3-1E	.095	#3-4E	.234
#3-2S	.089	#3-5S	.222
#3-2E	.114	#3-5E	.109
#3-3S	.135	#3-6S	.105
#3-3E	.210	#3-6E	.070
		Lot# 3 AVERAGE	.138

8a. Filament diameter, microns, WARP
S.E.M. procedure
(diameters are an average
10 measurements)

	#3-1S	#3-2S	#3-3S
AVERAGE	10.82	11.08	10.76
Minimum	10.00	10.00	9.40
Maximum	11.85	14.00	12.00
Std. Dev	0.53	1.28	0.89

	#3-4S	#3-5S	#3-6S	LOT3 AVG
AVERAGE	11.14	10.48	12.38	11.11
Minimum	10.40	8.80	9.00	8.80
Maximum	11.85	11.60	15.95	15.95
Std. Dev	0.53	1.02	2.02	1.27

8b. Filament diameter, microns, FILL
S.E.M. procedure
(diameters are an average
of 10 measurements)

	#3-1S
AVERAGE	12.73
Minimum	11.50
Maximum	15.65
Std. Dev	1.20

9a. Thread Count, per inch, WARP
PTM-5A

#3-1S	#3-1E	#3-2S
52	52	52
53	52	52
53	52	52
52	52	53
53	52	53
AVG. 52.6	52.0	52.4

CCA-3 Fabric for NASA Lot# 3

9a. Thread Count, per inch, WARP (CONTINUED)
PTM-5A

	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E
	52	52	52	52	53
	52	52	53	52	53
	53	52	53	51	52
	53	52	52	52	52
	53	53	52	52	53
AVG.	52.6	52.2	52.4	51.8	52.6

	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
	52	54	53	53	52.4
	52	53	53	54	52.6
	52	53	53	53	52.4
	52	52	52	53	52.3
	52	52	52	53	52.5
AVG.	52.0	52.8	52.6	53.2	52.4

9b. Thread Count, per inch, FILL
PTM-5A

	#3-1S	#3-1E	#3-2S
	49	49	50
	49	49	49
	49	48	49
	49	49	50
	49	49	49
AVG.	49.0	48.8	49.4

	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E
	50	50	49	49	50
	49	49	49	49	50
	50	49	49	49	50
	50	49	49	49	50
	49	49	50	49	50
AVG.	49.6	49.2	49.2	49.0	50.0

	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
	49	47	49	49	49.2
	49	48	49	49	49.0
	50	48	49	50	49.2
	49	49	49	49	49.3
	50	48	49	49	49.2
AVG.	49.4	48.0	49.0	49.2	49.2

10a. Areal weight as received, gm/4x4
PTM-3A

	#3-1S	#3-1E	#3-2S
LEFT	3.108	2.991	3.053
CENTER	3.148	3.008	3.045
RIGHT	3.082	3.001	3.040
AVG.	3.113	3.000	3.046

	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E
LEFT	3.054	3.069	3.166	3.110	3.060
CENTER	3.019	3.036	3.082	3.057	3.027
RIGHT	3.012	3.068	3.149	3.086	3.078
AVG.	3.028	3.058	3.132	3.084	3.055

CCA-3 Fabric for NASA Lot# 3

10a. Areal weight as received, gm/4x4 (CONTINUED)
PTM-3A

	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
LEFT	3.012	3.030	3.030	3.089	3.064
CENTER	3.007	2.982	2.980	3.046	3.036
RIGHT	3.080	3.076	2.942	3.065	3.057
AVG.	3.033	3.029	2.984	3.067	3.052

10b. Volatiles as received, %
PTM-3A

	#3-1S	#3-1E	#3-2S
LEFT	8.85	6.85	7.21
CENTER	8.74	7.05	6.60
RIGHT	8.21	7.16	6.41
AVG.	8.60	7.02	6.74

	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E
LEFT	6.42	6.61	7.17	8.20	6.50
CENTER	6.13	6.92	7.40	8.11	6.31
RIGHT	5.54	7.59	8.07	8.04	6.24
AVG.	6.03	7.04	7.54	8.12	6.35

	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
LEFT	6.91	6.50	6.50	6.54	7.02
CENTER	6.78	6.44	6.48	6.96	6.99
RIGHT	7.11	7.22	6.56	5.81	7.00
AVG.	6.93	6.72	6.51	6.44	7.00

10c. Weight Change on Acetone Wash, %
PTM-3A

	#3-1S	#3-1E	#3-2S
LEFT	-.39	-1.97	-2.08
CENTER	.73	-1.90	-2.50
RIGHT	-.64	-1.72	-2.57
AVG.	-.59	-1.86	-2.38

	#3-2E	#3-3S	#3-3E	#3-4S	#3-4E
LEFT	-3.18	-3.11	-2.25	-.81	-.35
CENTER	-3.18	-2.83	-1.93	-.96	-.14
RIGHT	-3.34	-2.29	-1.35	-1.20	.00
AVG.	-3.23	-2.74	-1.84	-.99	-.16

	#3-5S	#3-5E	#3-6S	#3-6E	LOT3 AVG
LEFT	.04	-.07	-.11	.35	-1.16
CENTER	-.14	-.29	-.04	.42	-1.18
RIGHT	.00	-.21	-.04	.07	-1.11
AVG.	-.04	-.19	-.06	.28	-1.15

U.S. Polymeric

Hamid M. Quraishi

Hamid M. Quraishi, Manager
Quality Assurance Department

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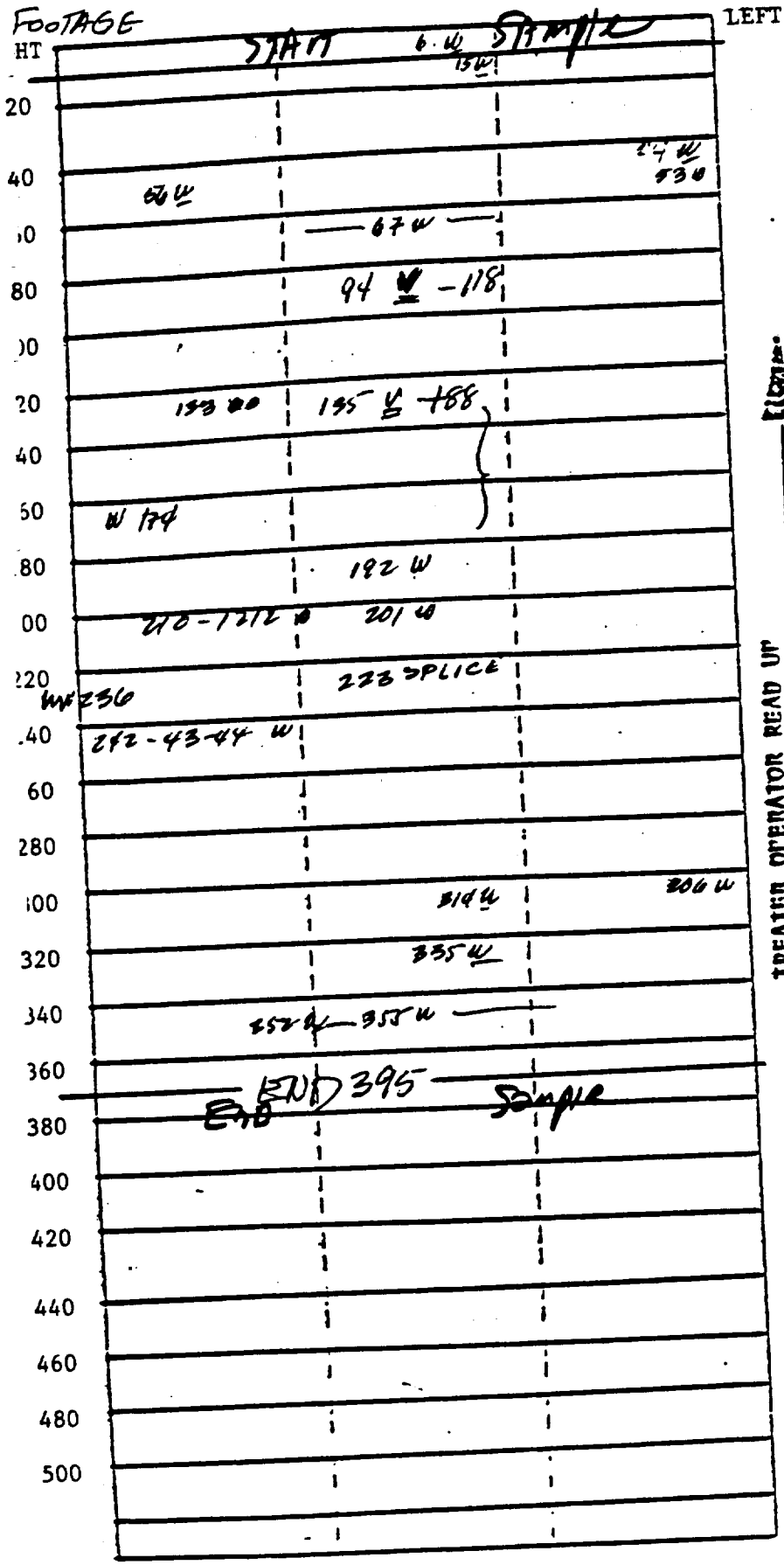


FABRIC CCA-3-43

MFG. HITCO

ROLL NO. 18894

YARDS 137 yds

POUNDS 827 lbs

ORDER NO. 7108

SPECIFICATION STM-3184 SCN2

Q.C. FILE # NASA 3-1

SYMBOLS

- TEAR
- SPOTS OR STAINS
- FOLDS
- EDGE CURL
- TIGHT WEAVE OR SELVAGE
- WEAVE DISTORTION
- VISIBLE PUCKERS
- ONE PUCKER CREASING
- TWO OR MORE CREASINGS

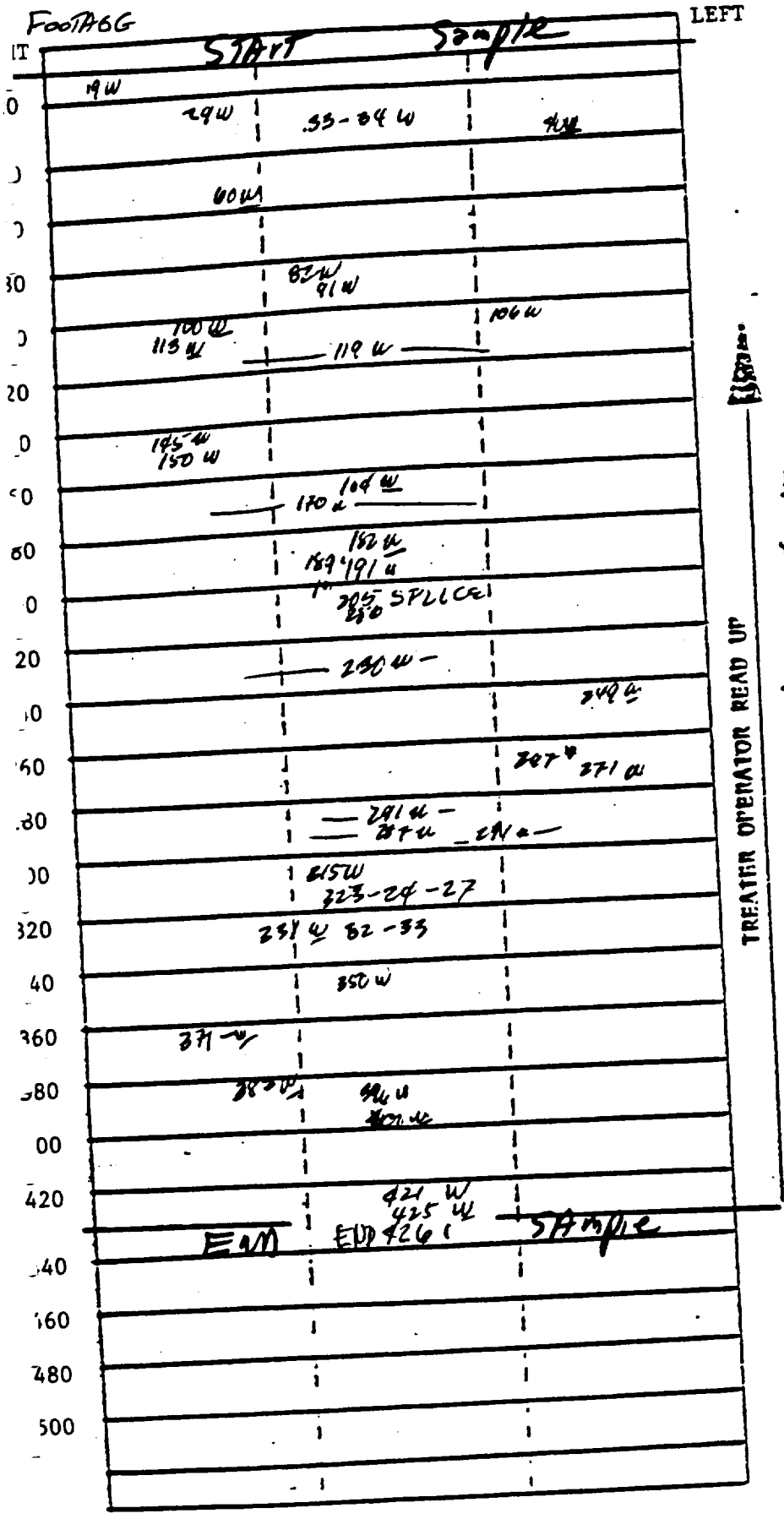
REMARKS

NASA Roll # 3-1
START and END

GRADE Group B

USP NO. CHAP 5B

DATE 3/21/86



FABRIC CCA-3-43"

MFG. HITCO

ROLL NO. 18899

YARDS 149.3

POUNDS 90.9

ORDER NO. 71108

SPECIFICATION STW4-3184 Scn-2

Q.C. FILE # NASA 3-2

SYMBOLS

- TEAR
- SPOTS OR STAINS
- FOLDS
- EDGE CURL
- TIGHT WEAVE OR SELVAGE
- WEAVE DISTORTION
- VISIBLE PUCKERS
- ONE PUCKER CREASING
- TWO OR MORE CREASINGS

REMARKS

NASA Roll #3-2
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FABRIC CCA-3 -43'

MFG. HiTco

ROLL NO. 18898

YARDS 158.9

POUNDS 96.6

ORDER NO. 71108

SPECIFICATION STW4-3184 SCW2

Q.C. FILE # NASA 3-3

FOOTAGE	RIGHT		LEFT
IT	START	Sample 4W	
20			84 W
40		91 W	
60			68 W 73 W
80		94 W	
100	101 W	111-114 W	
120		123 W	133 W 144
140			153 155 W
160			163 W
180		187 W	
200		202 W	
220	232 W	234 SPLICE	227 W
240	247 W	257 W	
260			361 W 371 W
280			281-297 W
300		309 W	319 W 325 W
320		339-350 W	
340			357 W -366
360			377 380
380			380-385 W
400	408 W	416 W	
420		423-20	439
440	END	459	Sample
460			
480			
500			

TREATER OPERATOR READ UP

SYMBOLS

- TEAR
- SPOTS OR STAINS
- FOLDS
- EDGE CURL
- TIGHT WEAVE OR SELVAGE
- WEAVE DISTORTION
- VISIBLE PUCKERS
- ONE PUCKER CREASING
- TWO OR MORE CREASINGS

REMARKS

NASA Roll # 3-3
START and END

GRADE Gray B

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DATE 3/21/86

FABRIC CCA-3 -43"

MFG. HITCO

ROLL NO. 18897

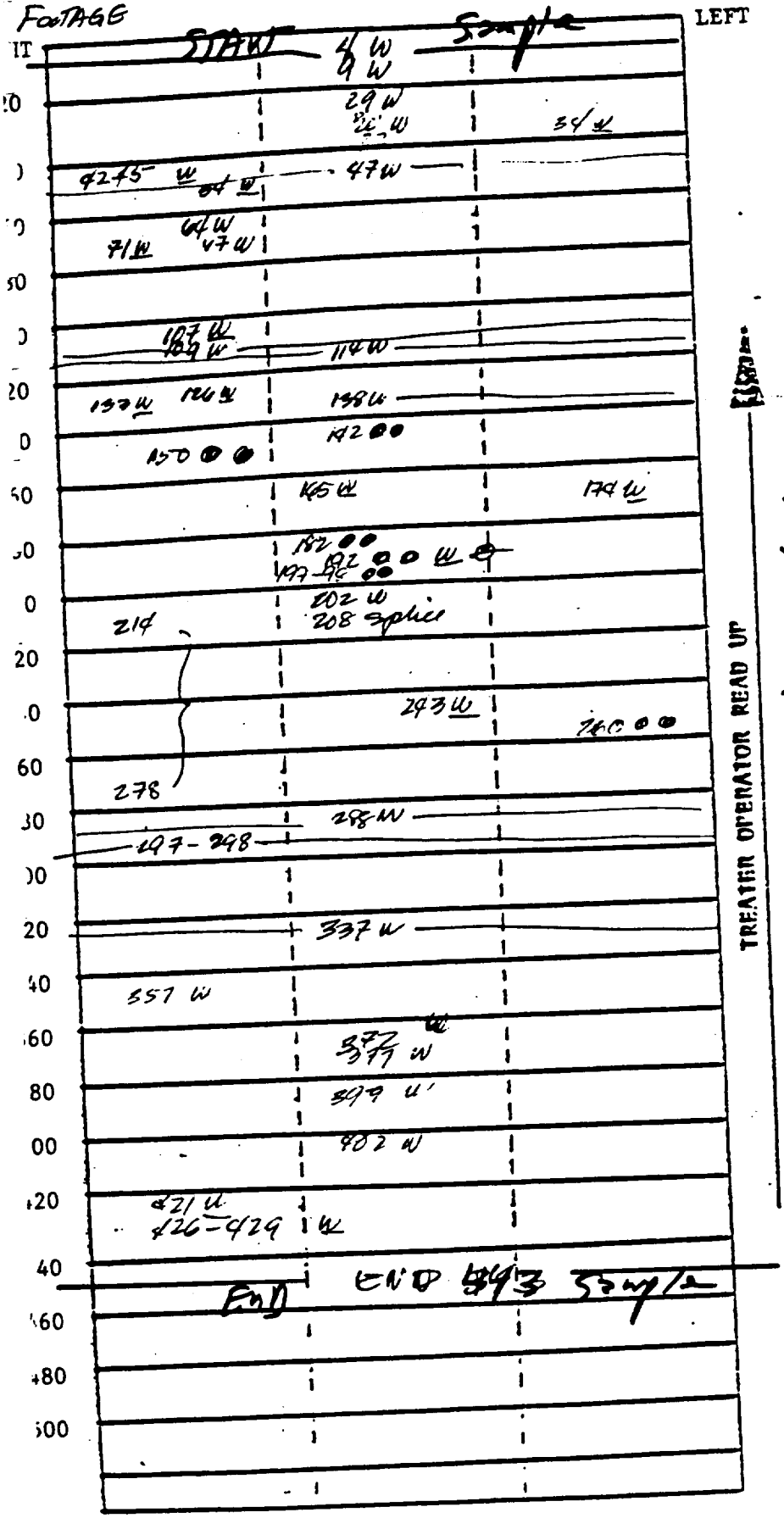
YARDS 152

POUNDS 94.1

ORDER NO. 71108

SPECIFICATION STM-3184 SCN-2

Q.C. FILE # NASA 3-4



SYMBOLS

- TEAR
- SPOTS OR STAINS
- FOLDS
- EDGE CURL
- TIGHT WEAVE OR SELVAGE
- WEAVE DISTORTION
- VISIBLE PUCKERS
- ONE PUCKER CREASING
- TWO OR MORE CREASINGS

REMARKS

NASA Roll # 3-4
START and END

GRADE Group C

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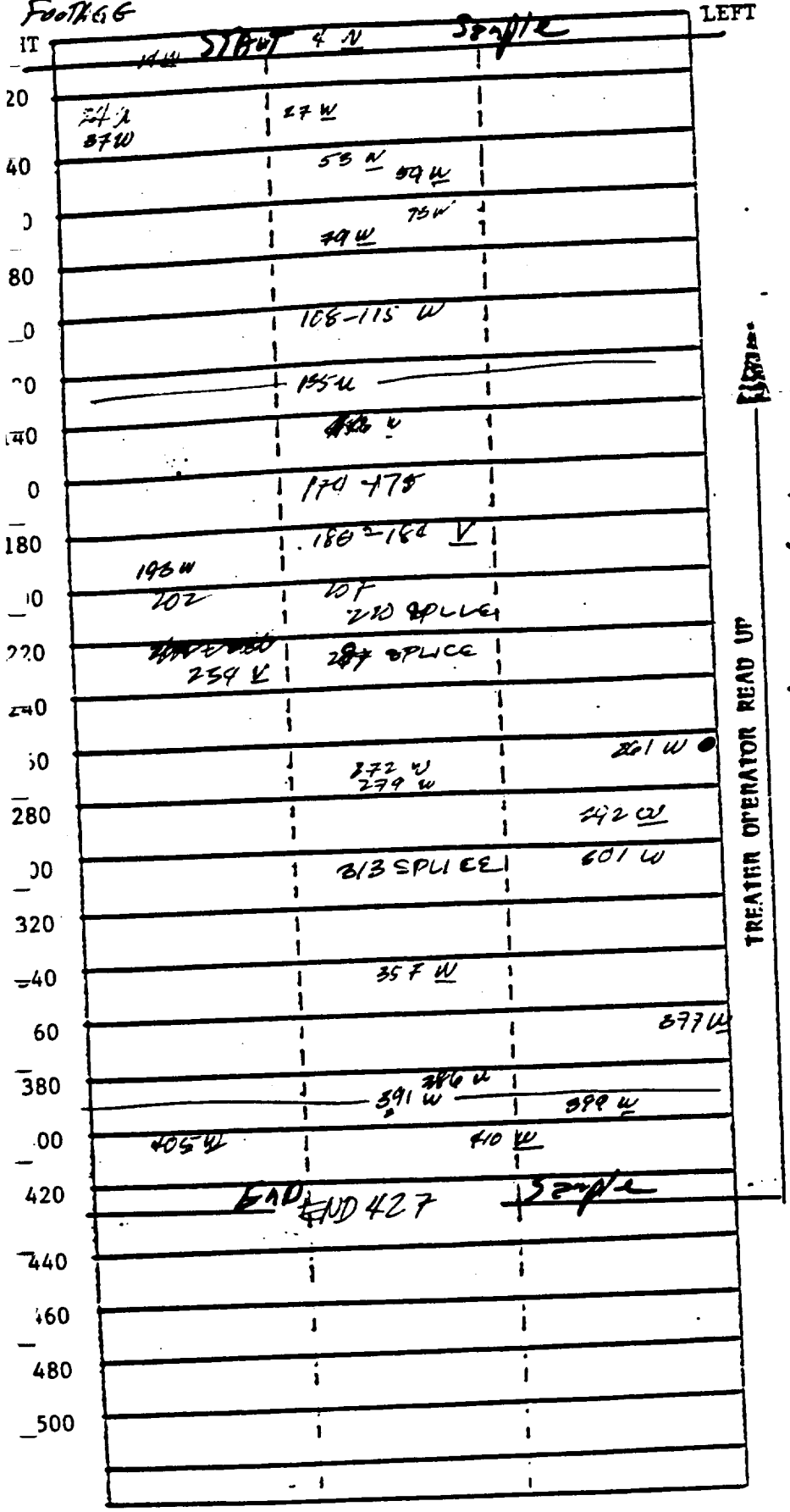

DATE 3/21/86

FABRIC CCA-3-43"

MFG. HITCO

ROLL NO. 18896

YARDS 147.1

POUNDS 89.5

ORDER NO. 7108

SPECIFICATION STW4-3184-SEN2

Q.C. FILE # NASA-3-5

SYMBOLS

- TEAR
- SPOTS OR STAINS
- FOLDS
- EDGE CURL
- TIGHT WEAVE OR SELVAGE
- WEAVE DISTORTION
- VISIBLE PUCKERS
- ONE PUCKER CREASING
- TWO OR MORE CREASINGS

REMARKS

NASA Roll #3-5
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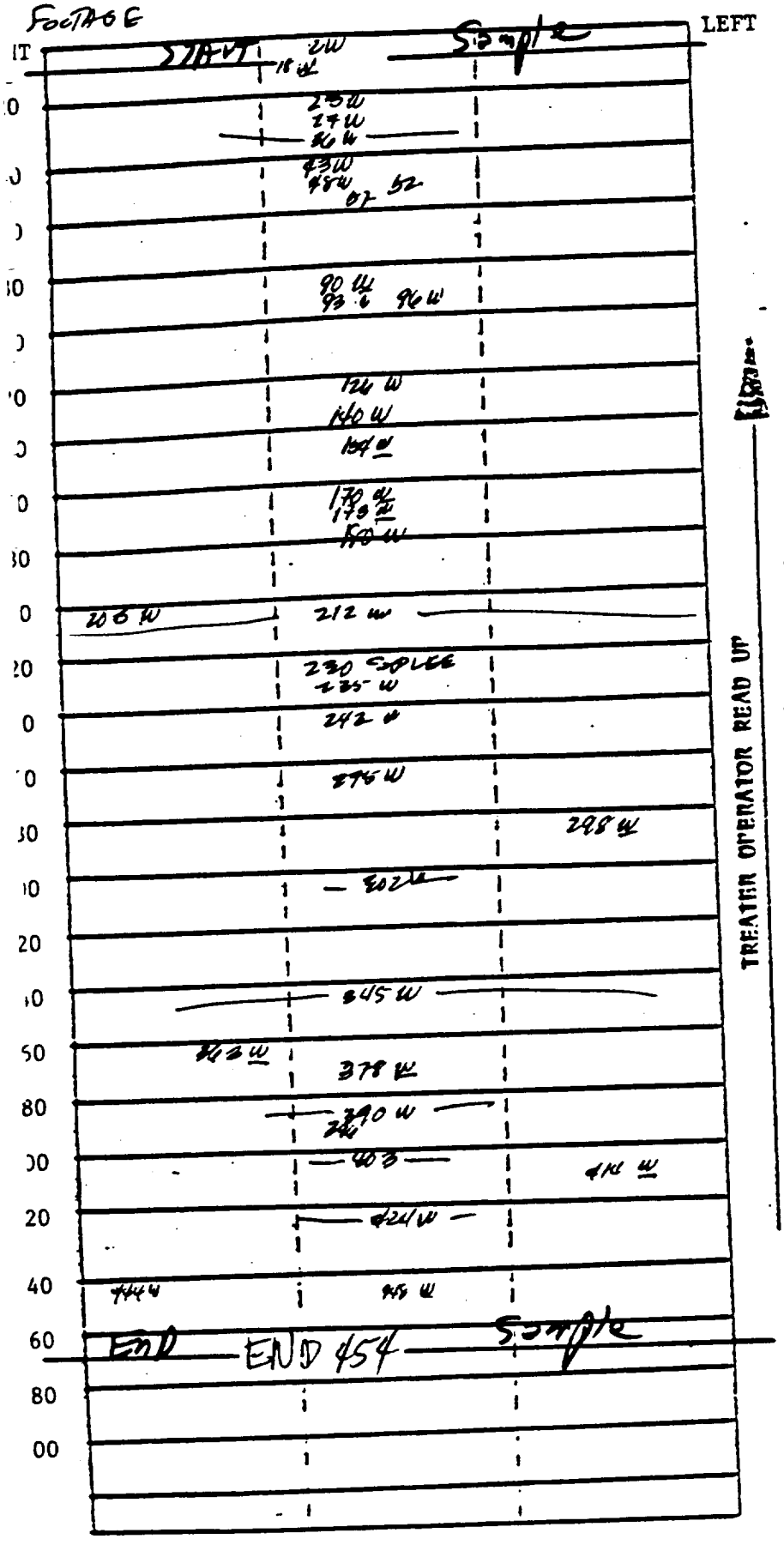

FABRIC CCA-3-43"

MFG. HITCO

ROLL NO. 18895

YARDS 157.5

POUNDS 97.4 lbs

ORDER NO. 71108

SPECIFICATION STW4-31845CN-2

Q.C. FILE # NASA 3-6

SYMBOLS

- TEAR
- SPOTS OR STAINS
- FOLDS
- EDGE CURL
- TIGHT WEAVE OR SELVAGE
- WEAVE DISTORTION
- VISIBLE PUCKERS
- ONE PUCKER CREASING
- TWO OR MORE CREASINGS

REMARKS

NASA Roll #3-6
START and END

GRADE Grade B

CHART 6A

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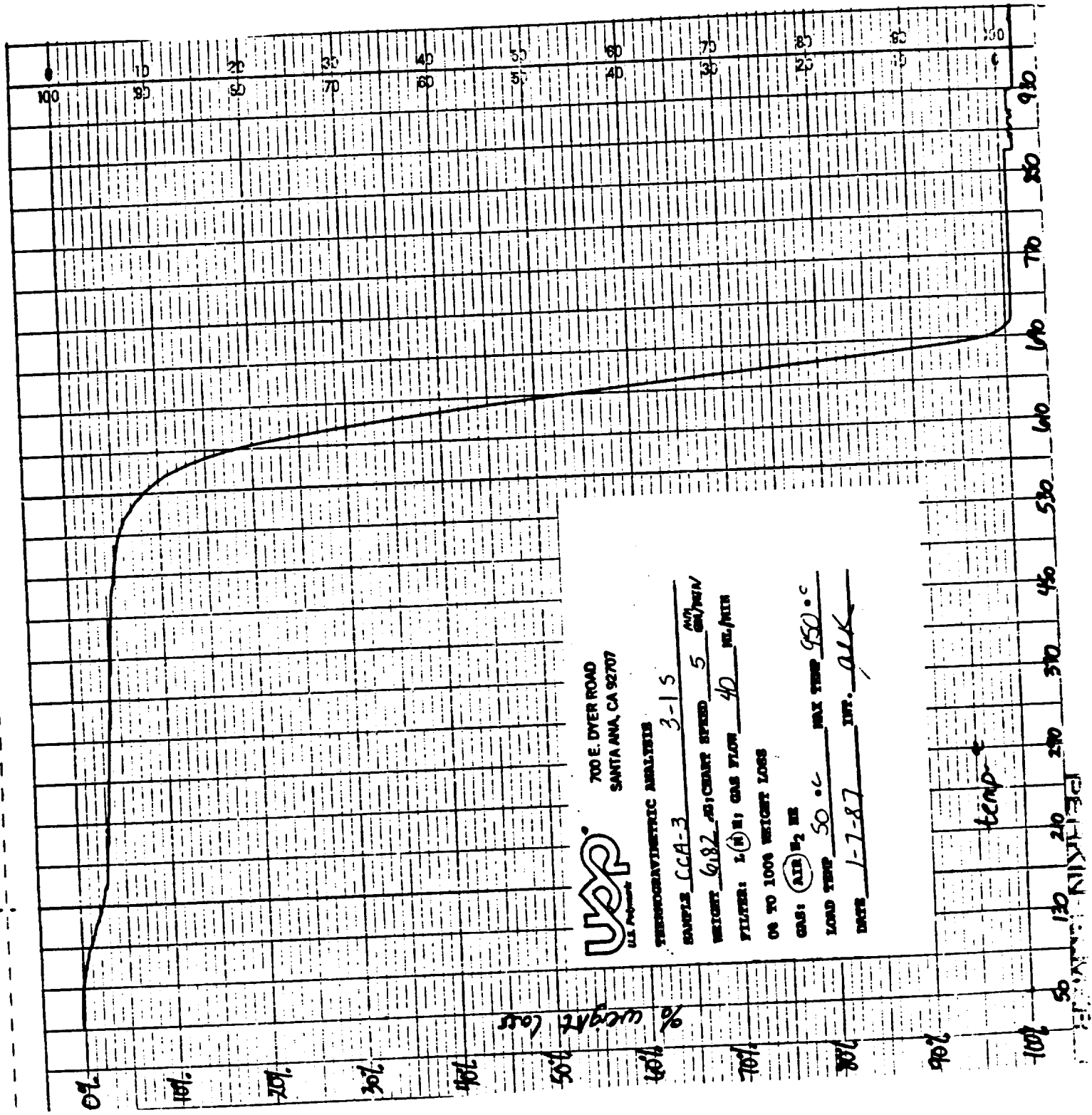

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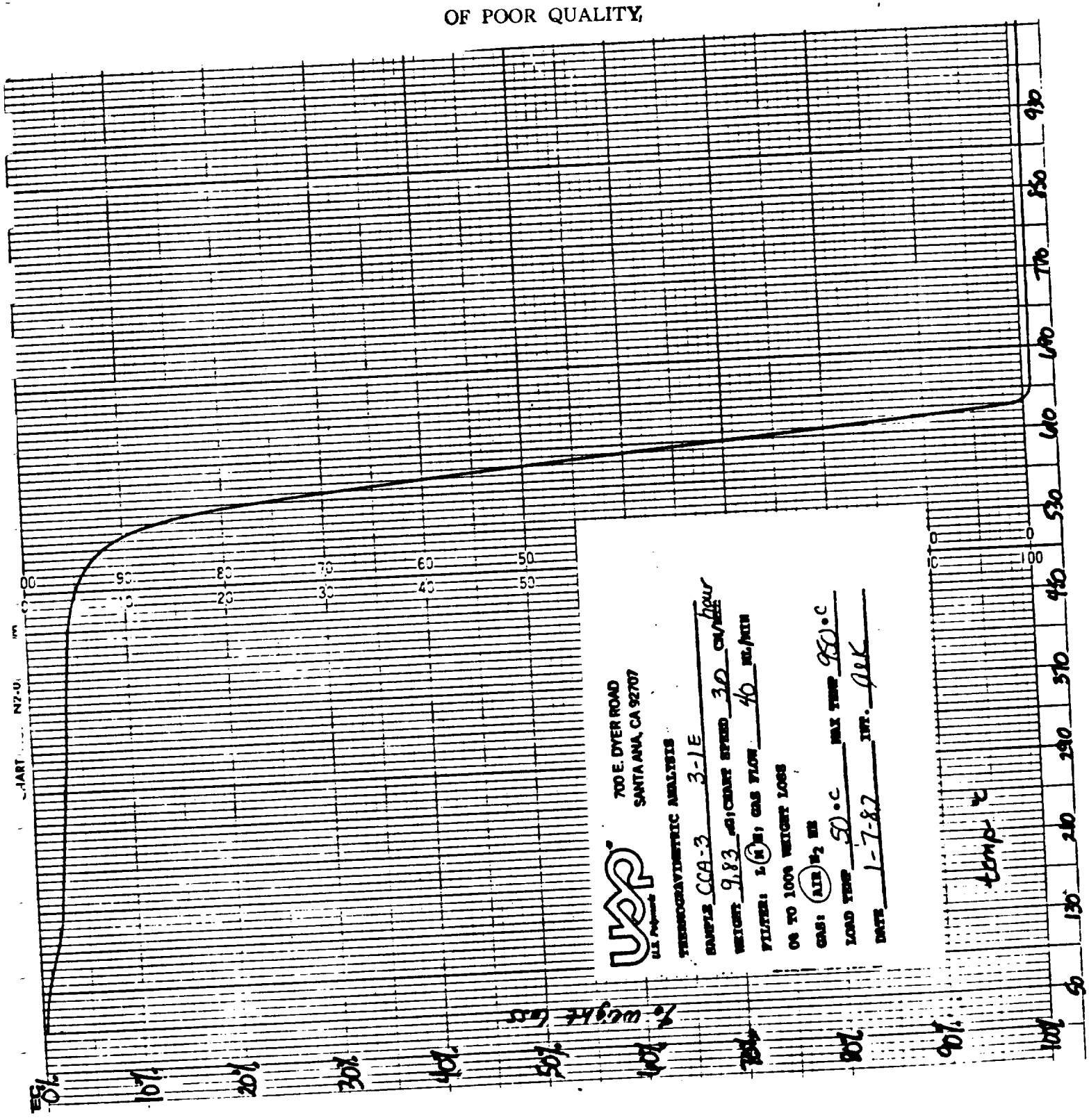

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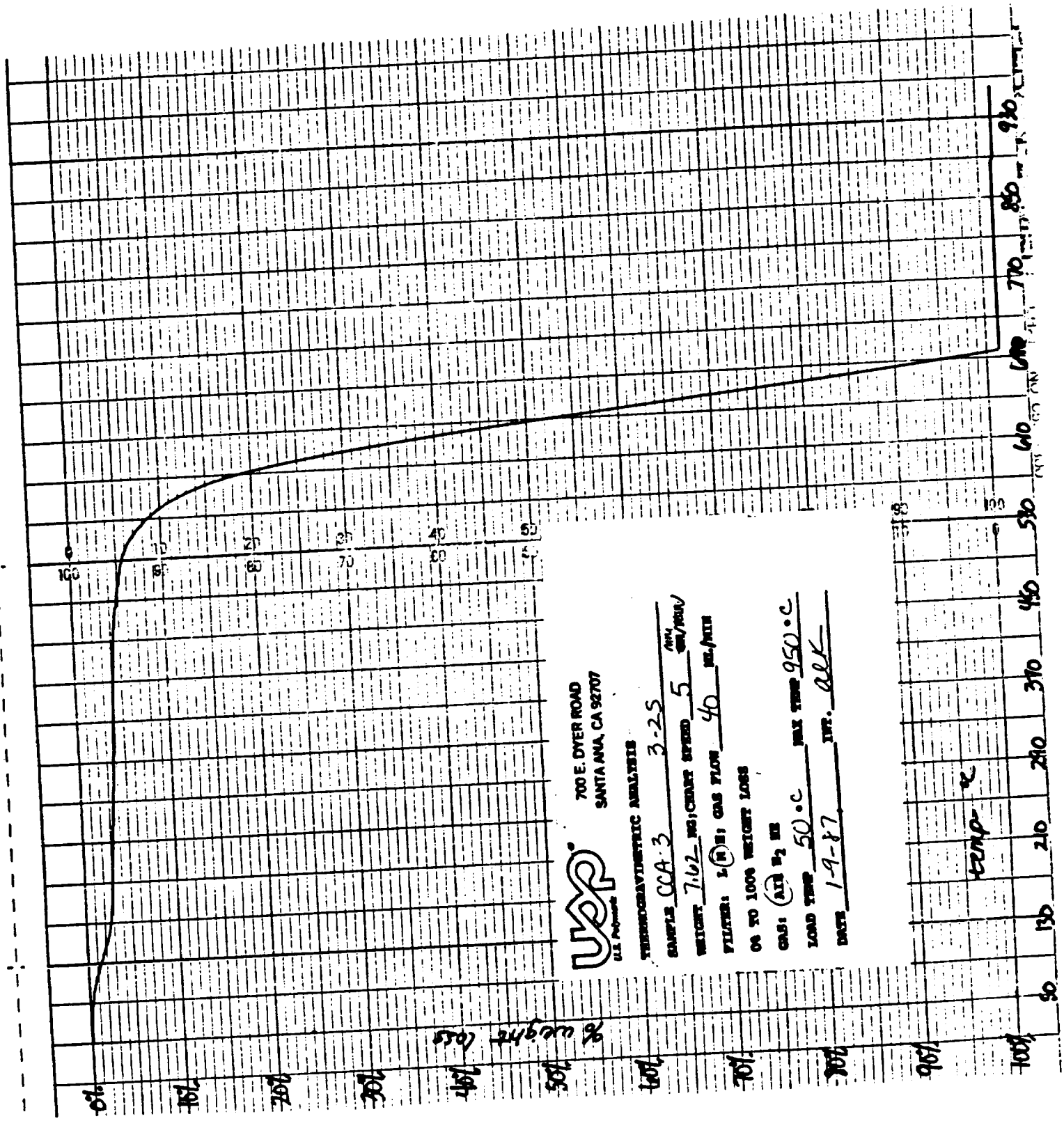

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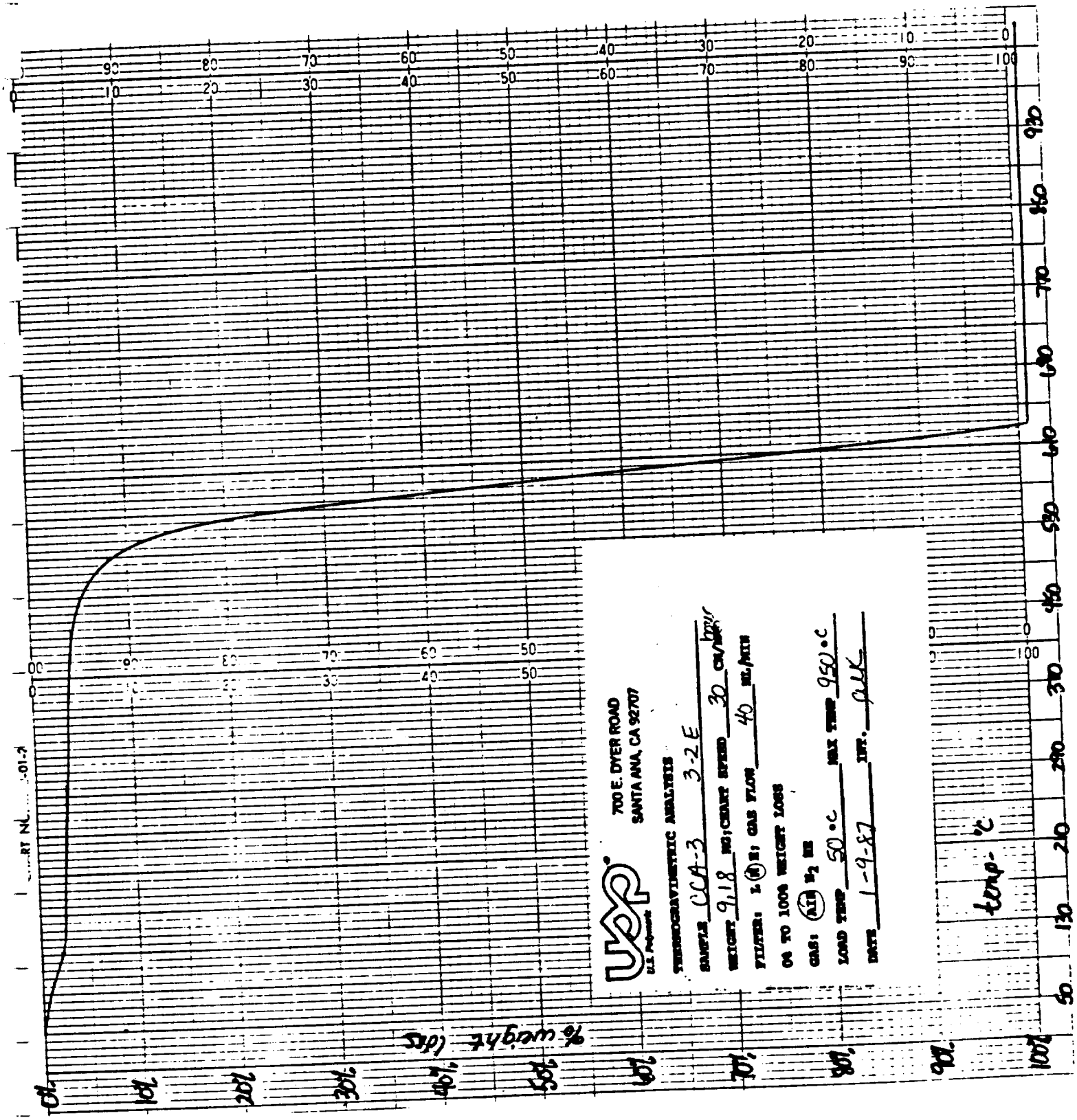

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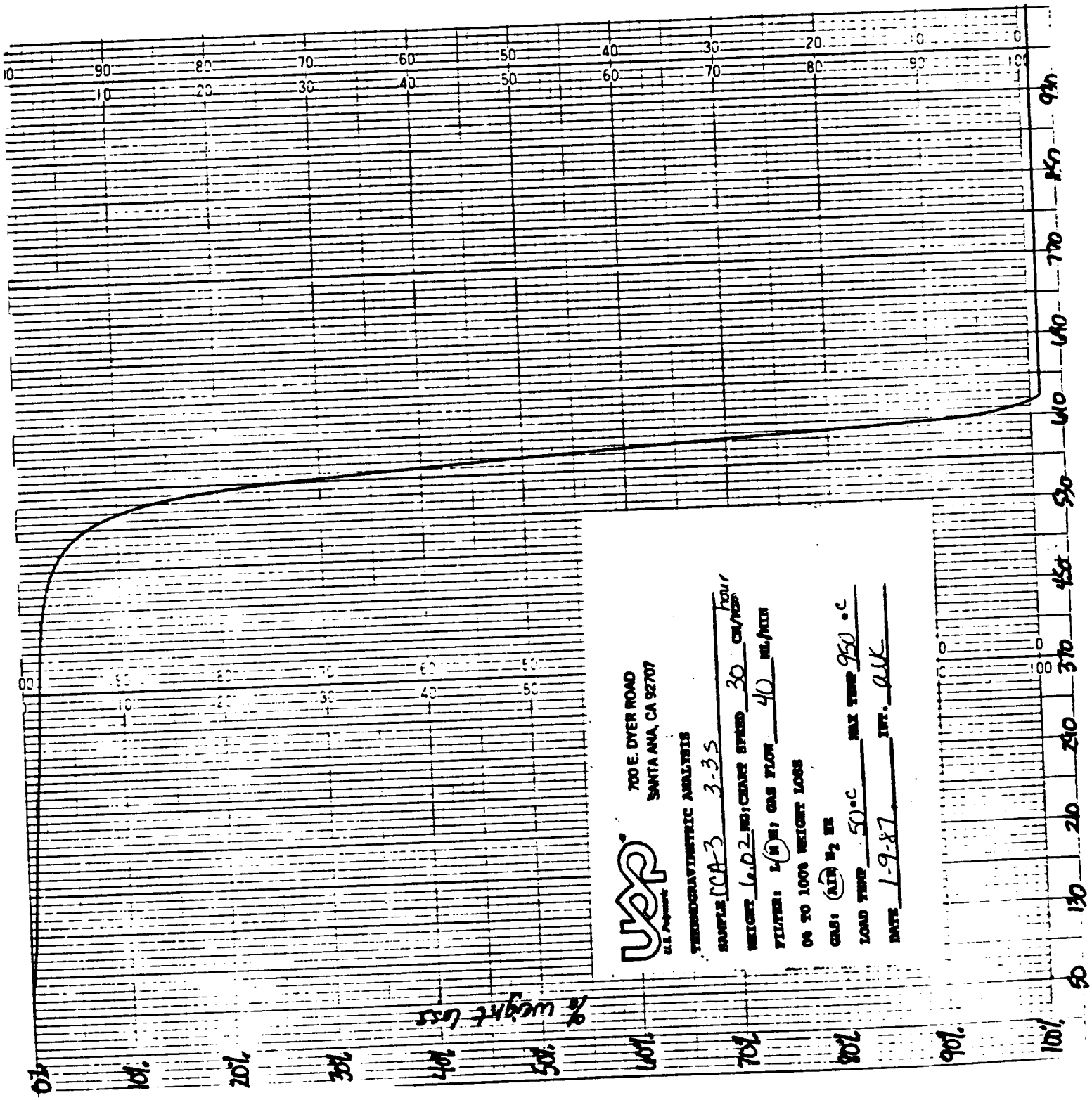

CHART 6F

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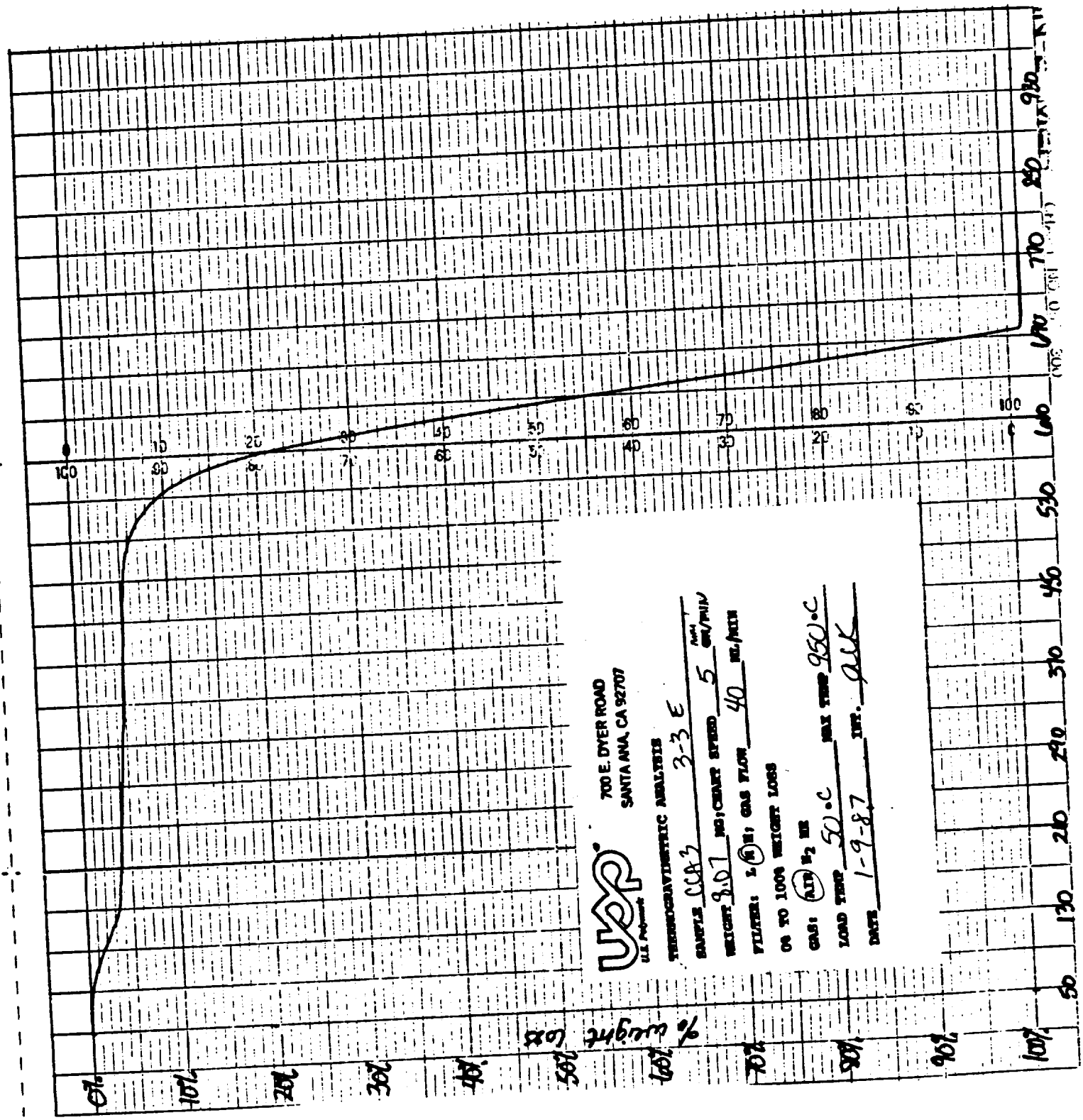

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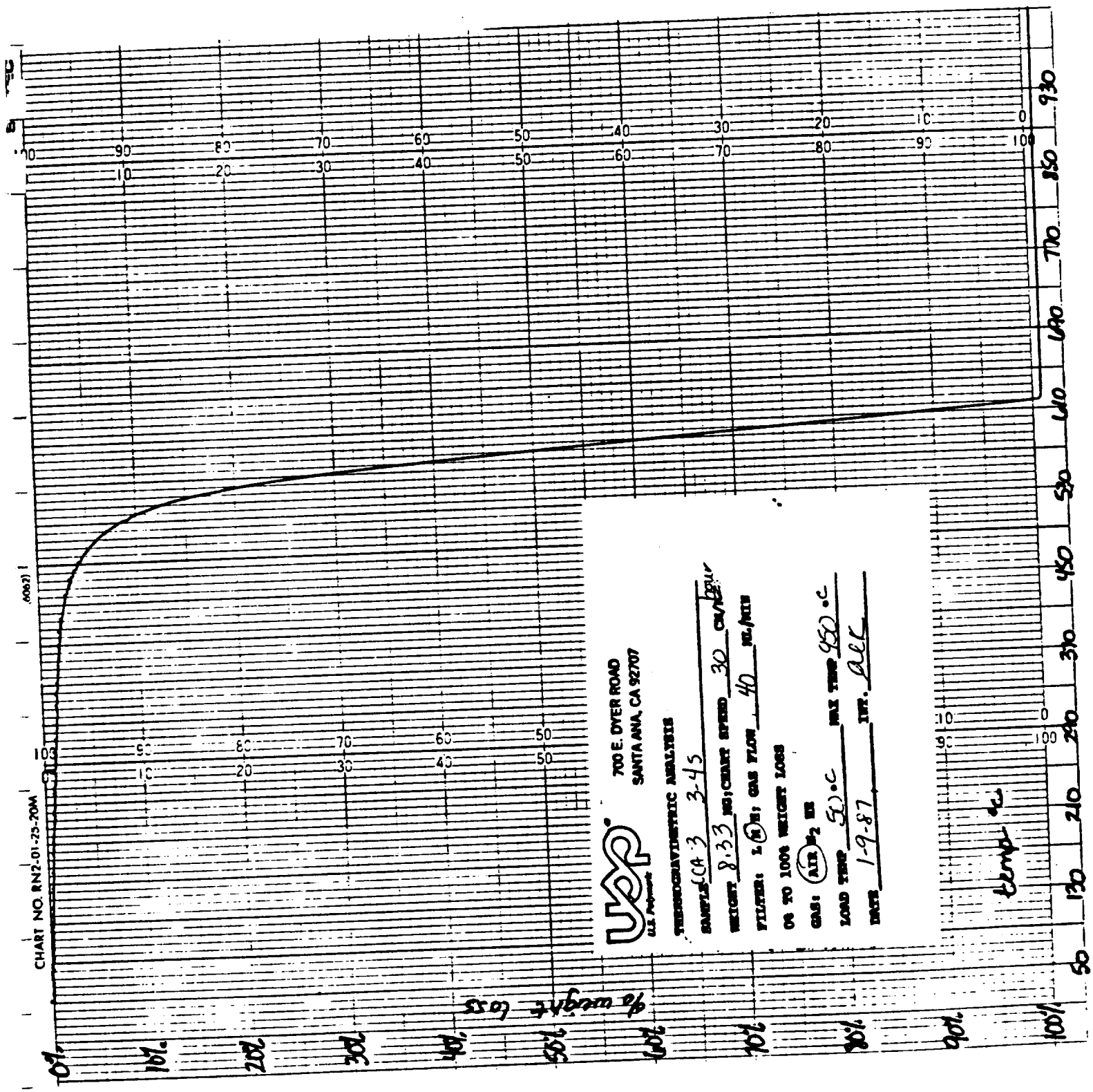

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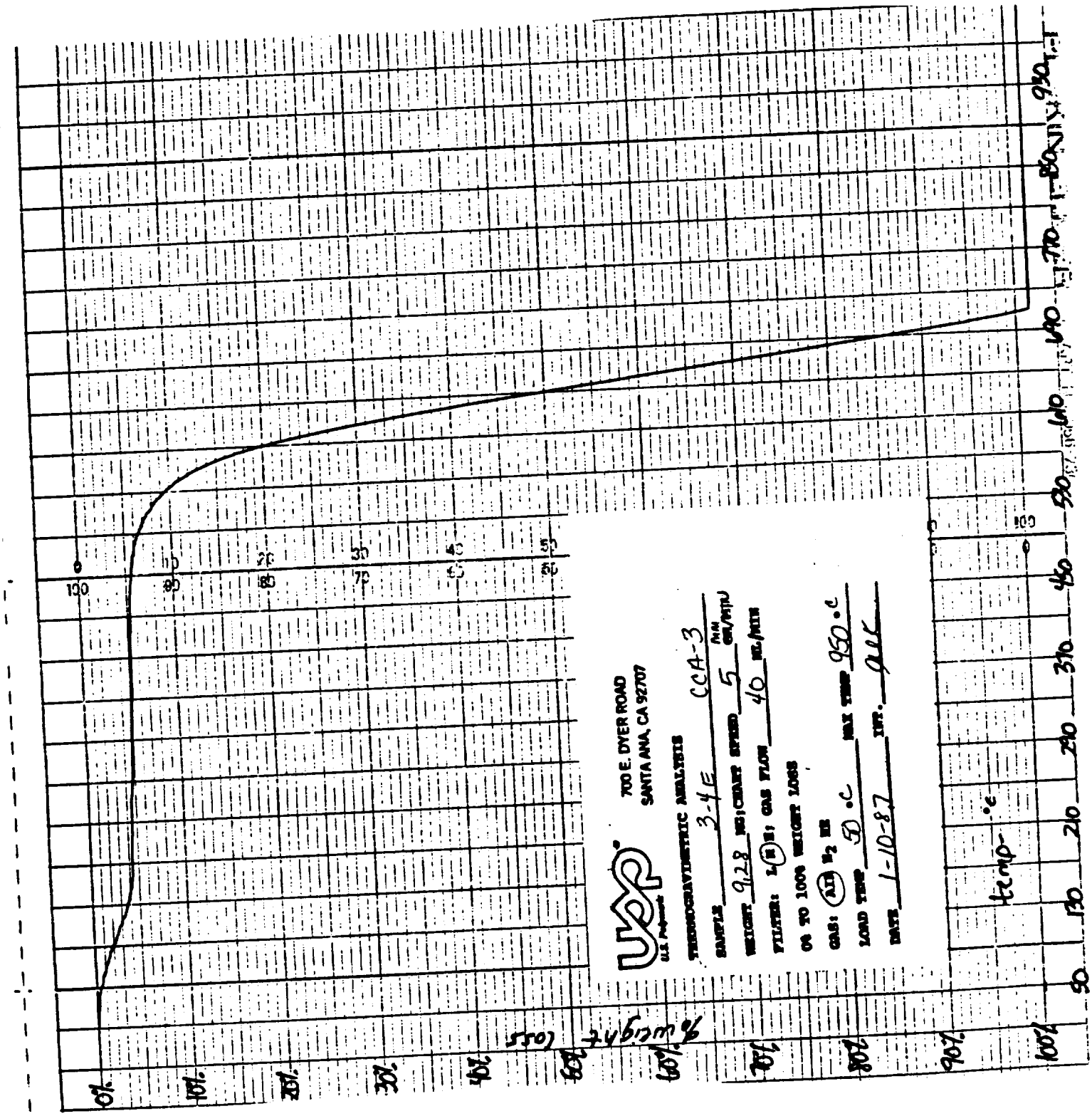

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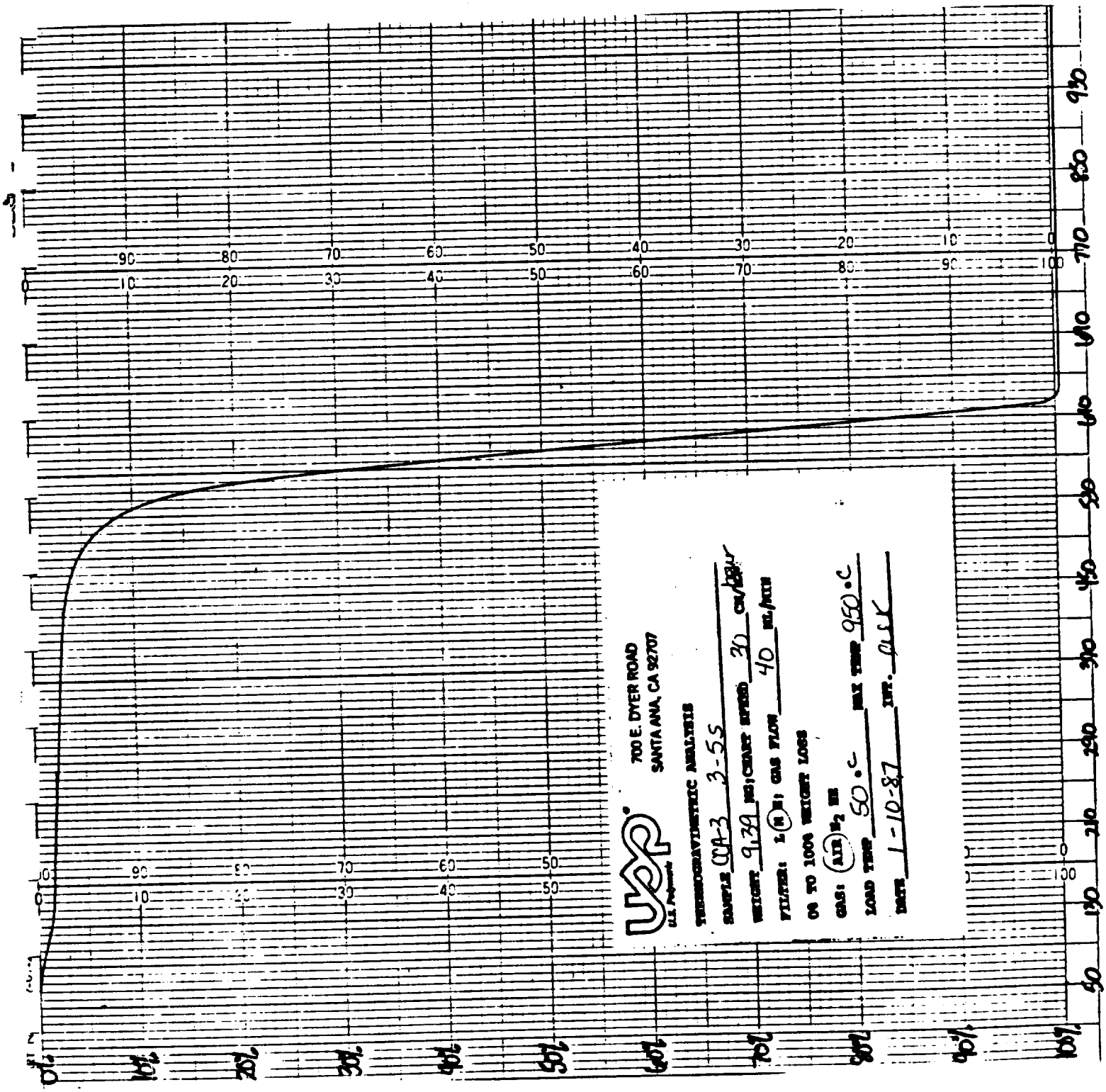

CHART 6J

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CHART 6K

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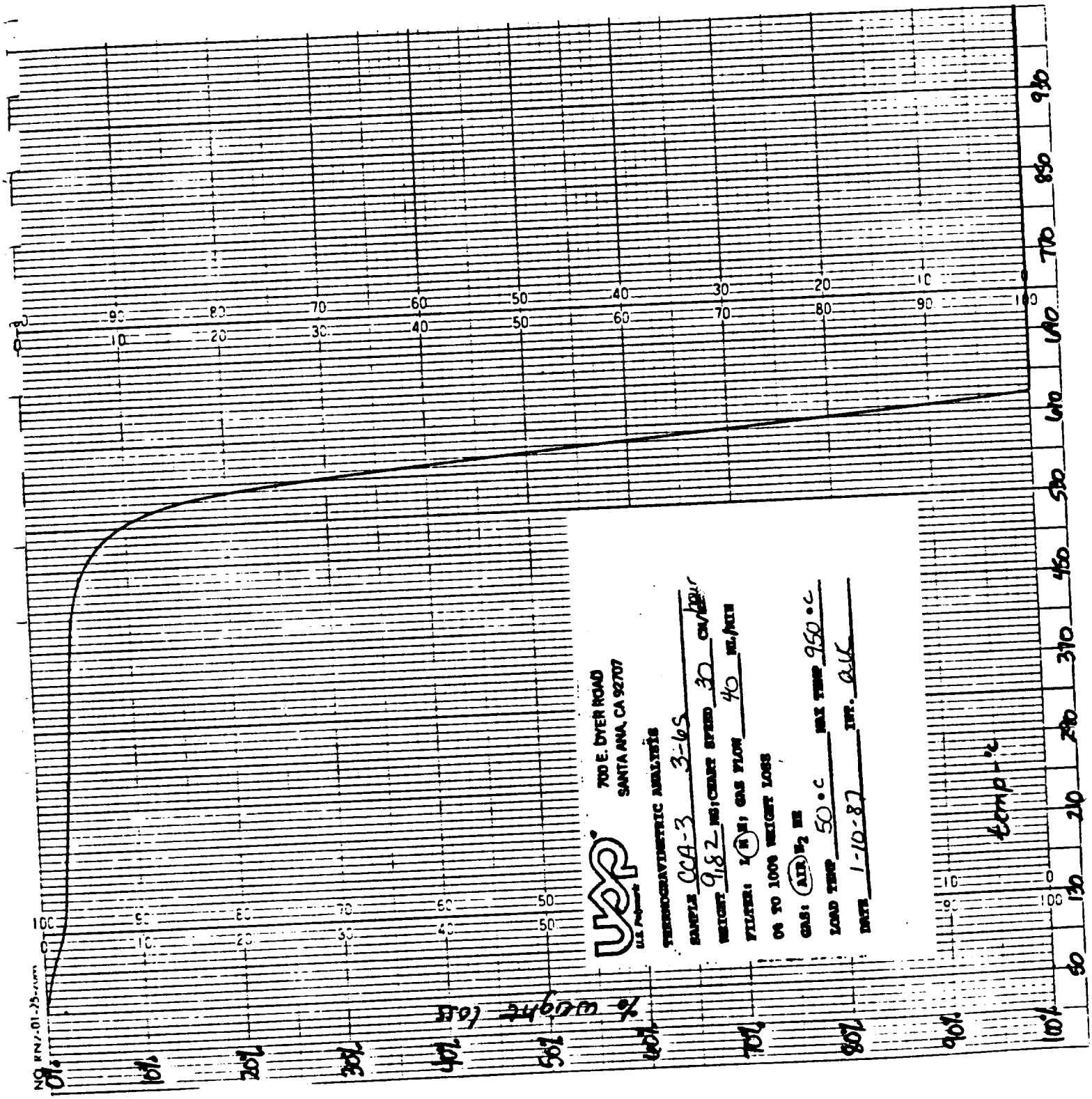

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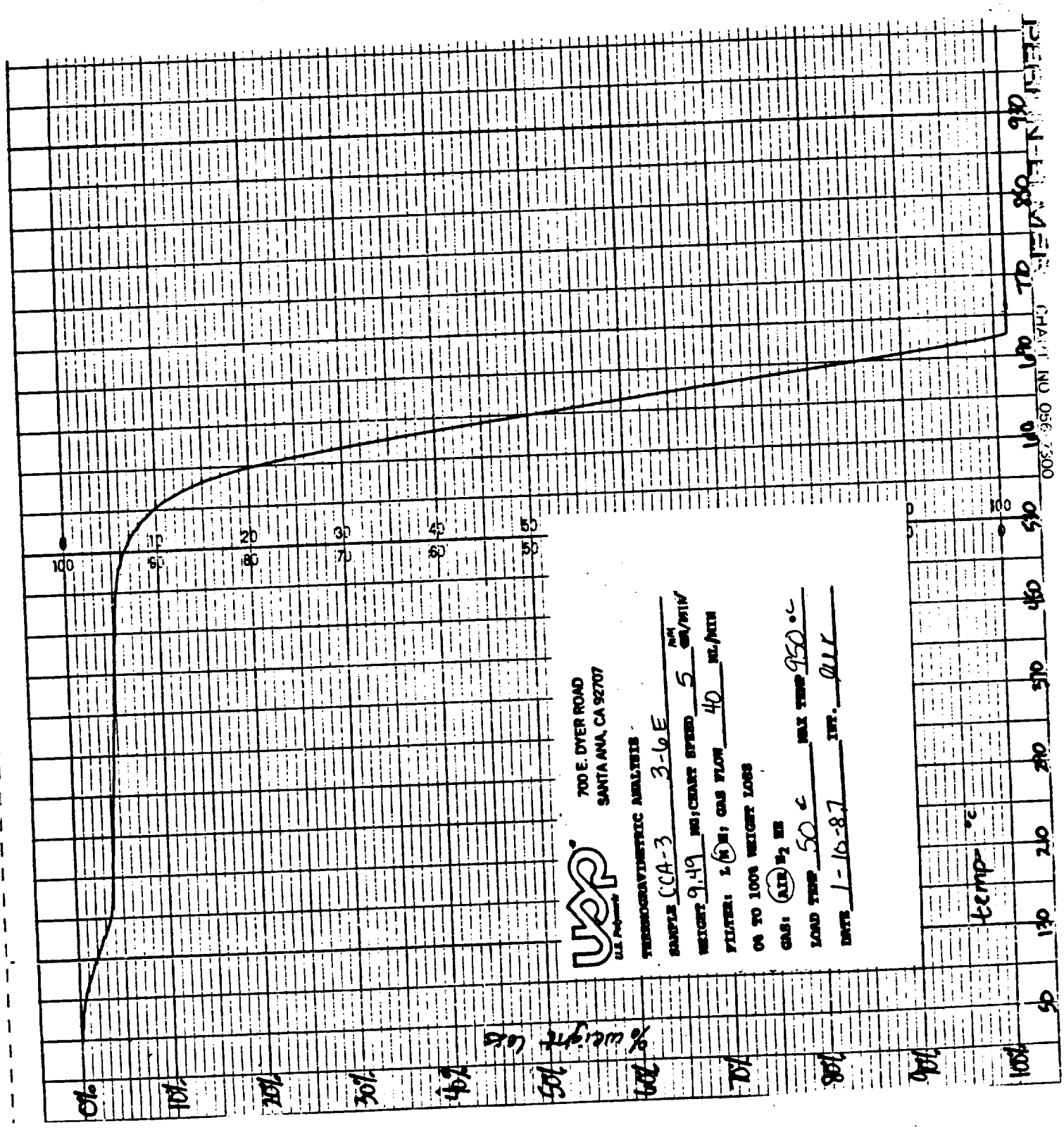


TABLE OF CONTENTS

PREPREG TESTING

NAS8-36298

U.S. Polymeric O.E. 71108

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

CHARTS

U.S. Polymeric

PREPREG TESTING

NAS8-36298

U.S. POLYMERIC O.E.71108

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

1a. Resin Content, Soxhlet, % CTM-6D

ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
35.4	33.6	35.9	36.5
35.1	34.4	36.3	35.1
32.7	34.7	35.5	37.8
AVG. 34.4	34.2	35.9	36.5

ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
33.5	33.8	33.9	33.5	33.8	33.8	33.7
32.0	33.9	32.4	35.2	32.7	33.2	33.0
32.9	33.9	32.0	33.3	35.3	33.1	34.8
AVG. 32.8	33.9	32.8	34.0	33.9	33.4	33.8

ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
35.8	35.9	33.1	--	--	--	--
33.5	33.4	32.2	--	--	--	--
35.5	35.9	32.2	--	--	--	--
AVG. 34.9	35.1	32.5	--	--	--	--

NASA LOT# 3 AVERAGE 34.1

HITCO MATERIALS DIVISION
700 E. DYER ROAD, SANTA ANA, CALIFORNIA 92707 • (714) 549-1101 • TWX (910) 595-1130 • FAX # (714) 549-2858-5-2437

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

1b. Filler Content, Soxhlet, %
CTM-6D

	ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
	14.9	14.1	15.1	15.3
	14.8	14.5	15.3	14.8
	13.7	14.6	14.9	15.9
AVG.	14.5	14.4	15.1	15.3

	ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
	14.1	14.2	14.2	14.1	14.2	14.2	14.2
	13.4	14.2	13.6	14.8	13.7	13.9	13.9
	13.8	14.2	13.4	14.0	14.7	13.9	14.6
AVG.	13.8	14.2	13.7	14.3	14.2	14.0	14.2

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	15.0	15.1	13.9	--	--	--	--
	14.1	14.0	13.5	--	--	--	--
	14.9	15.1	13.5	--	--	--	--
AVG.	14.7	14.7	13.6	--	--	--	--

NASA LOT#3 AVERAGE 14.3

1c. Cloth Content, Soxhlet, %
CTM-6D

	ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
	49.7	52.3	49.0	48.2
	50.1	51.1	48.4	50.1
	53.6	50.7	49.6	46.3
AVG.	51.1	51.4	49.0	48.2

	ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
	52.4	52.0	51.9	52.4	52.0	52.0	52.1
	54.6	51.9	54.0	50.0	53.6	52.9	53.1
	53.3	51.9	54.6	52.7	49.9	53.0	50.6
AVG.	53.4	51.9	53.5	51.7	51.8	52.6	51.9

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	49.2	49.0	53.0	--	--	--	--
	52.4	52.6	54.3	--	--	--	--
	49.6	49.0	54.3	--	--	--	--
AVG.	50.4	50.2	53.9	--	--	--	--

NASA LOT# 3 AVERAGE 51.5

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

2. Volatile Content, %
PTM-17B

	ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
	4.3	3.8	4.3	3.9
	4.1	3.6	3.9	3.8
	4.8	3.6	4.1	3.6
AVG.	4.4	3.7	4.1	3.8

	ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
	3.7	3.6	3.9	3.9	4.0	4.2	3.8
	3.5	3.5	3.4	3.7	3.7	3.5	3.6
	3.7	3.6	4.0	3.8	3.8	3.5	3.6
AVG.	3.6	3.6	3.8	3.8	3.8	3.7	3.7

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	4.4	4.6	3.9	--	--	--	--
	3.9	3.8	3.8	--	--	--	--
	3.9	3.8	3.7	--	--	--	--
AVG.	4.1	4.1	3.8	--	--	--	--

NASA LOT# 3 AVERAGE 3.8

3. Flow, %
PTM-19G

	ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
	19.5	16.3	18.9	15.6
	17.8	15.4	17.5	11.3
	18.1	16.7	16.9	14.8
AVG.	18.5	16.1	17.8	13.9

	ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
	11.7	19.7	11.4	11.7	13.3	14.3	15.7
	15.0	16.2	10.5	12.3	13.6	14.3	15.1
	14.1	17.0	12.0	11.8	14.0	13.8	15.2
AVG.	13.6	17.6	11.3	11.9	13.6	14.1	15.3

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	17.7	19.4	18.5	--	--	--	--
	17.8	17.2	19.7	--	--	--	--
	17.5	16.8	19.5	--	--	--	--
AVG.	17.7	17.8	19.2	--	--	--	--

NASA LOT# 3 AVERAGE 15.6

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

4. Resin Content, Dry Basis, %
PTM-16F, Type II

	ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
	36.5	34.6	36.8	34.5
	35.4	33.7	34.2	34.1
	36.5	34.9	36.1	33.5
AVG.	36.1	34.4	35.7	34.0

	ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
	33.9	33.6	35.6	34.1	35.7	35.0	33.9
	33.5	32.6	31.9	31.7	32.0	33.5	33.6
	33.8	32.6	37.0	34.6	35.7	34.5	34.8
AVG.	33.7	32.9	34.8	33.5	34.5	34.3	34.1

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	35.9	36.3	33.6	--	--	--	--
	32.9	32.7	32.3	--	--	--	--
	35.8	35.7	32.9	--	--	--	--
AVG.	34.9	34.9	32.9	--	--	--	--

NASA LOT# 3 AVERAGE 34.3

5. TACK, lbs
PTM-80

ROLL#1-S	32	ROLL#5-E	50
ROLL#1-E	50	ROLL#6-S	59
ROLL#2-S	56	ROLL#6-E	63
ROLL#2-E	28	ROLL#7-S	65
ROLL#3-S	45	ROLL#7-E	29
ROLL#3-E	54	ROLL#8-S	--
ROLL#4-S	40	ROLL#8-E	--
ROLL#4-E	41	ROLL#9-S	--
ROLL#5-S	45	ROLL#9-E	--

NASA LOT# 3 AVERAGE 47

6. Gel Time, Seconds
PTM-20E

ROLL#1-S	63	ROLL#5-E	42
ROLL#1-E	95	ROLL#6-S	56
ROLL#2-S	61	ROLL#6-E	36
ROLL#2-E	38	ROLL#7-S	40
ROLL#3-S	55	ROLL#7-E	35
ROLL#3-E	50	ROLL#8-S	--
ROLL#4-S	44	ROLL#8-E	--
ROLL#4-E	32	ROLL#9-S	--
ROLL#5-S	49	ROLL#9-E	--

NASA LOT# 3 AVERAGE 50

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

7a. Atomic Absorption, ppm
CTM-53B

	ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END	ROLL#3 START
Na	344	438	436	428	276
K	19	17	20	20	16
Ca	2	2	2	2	2
Mg	2	2	2	3	2
Li	0	0	0	0	0
TOTAL	367	459	460	453	296

	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START	ROLL#6 END
Na	309	399	456	454	382	500	494
K	15	17	14	15	18	20	21
Ca	3	3	2	2	2	2	2
Mg	1	1	1	2	2	1	3
Li	0	0	0	0	0	0	0
TOTAL	328	420	473	473	404	523	520

	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END	LOT#3 AVG.
Na	533	288	--	--	--	--	410
K	22	18	--	--	--	--	18
Ca	2	2	--	--	--	--	2
Mg	2	2	--	--	--	--	2
Li	0	0	--	--	--	--	0
TOTAL	559	310	--	--	--	--	432

7b. Moisture Content, %
CTM-53B

ROLL#1-S	5.22	ROLL#5-E	5.03
ROLL#1-E	5.19	ROLL#6-S	5.24
ROLL#2-S	5.13	ROLL#6-E	5.42
ROLL#2-E	5.48	ROLL#7-S	5.34
ROLL#3-S	5.05	ROLL#7-E	5.21
ROLL#3-E	4.99	ROLL#8-S	----
ROLL#4-S	5.06	ROLL#8-E	----
ROLL#4-E	4.86	ROLL#9-S	----
ROLL#5-S	5.12	ROLL#9-E	----
NASA LOT# 3 AVERAGE			5.17

7c. Ash Content, %
CTM-53B

ROLL#1-S	.16	ROLL#5-E	.17
ROLL#1-E	.11	ROLL#6-S	.20
ROLL#2-S	.07	ROLL#6-E	.31
ROLL#2-E	.12	ROLL#7-S	.26
ROLL#3-S	.21	ROLL#7-E	.23
ROLL#3-E	.12	ROLL#8-S	---
ROLL#4-S	.15	ROLL#8-E	---
ROLL#4-E	.19	ROLL#9-S	---
ROLL#5-S	.18	ROLL#9-E	---
NASA LOT# 3 AVERAGE			.18

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

8. TGA, % weight loss at 500°C
CTM-51 (Nitrogen)

ROLL#1-S	10.9	ROLL#5-E	5.9
ROLL#1-E	9.7	ROLL#6-S	8.9
ROLL#2-S	9.6	ROLL#6-E	10.1
ROLL#2-E	9.4	ROLL#7-S	10.3
ROLL#3-S	9.1	ROLL#7-E	11.1
ROLL#3-E	9.5	ROLL#8-S	---
ROLL#4-S	10.4	ROLL#8-E	---
ROLL#4-E	9.5	ROLL#9-S	---
ROLL#5-S	10.1	ROLL#9-E	---

NASA LOT# 3 AVERAGE 9.6

See chart 8A-8N

9. DSC, °C
CTM-50A

	FIRST TEMPERATURE	SECOND TEMPERATURE
ROLL#1-S	180	233
ROLL#1-E	175	235
ROLL#2-S	177	232
ROLL#2-E	179	236
ROLL#3-S	176	237
ROLL#3-E	174	234
ROLL#4-S	179	237
ROLL#4-E	178	237
ROLL#5-S	178	238
ROLL#5-E	179	236
ROLL#6-S	179	235
ROLL#6-E	178	234
ROLL#7-S	178	235
ROLL#7-E	178	235
ROLL#8-S	---	---
ROLL#8-E	---	---
ROLL#9-S	---	---
ROLL#9-E	---	---
NASA LOT# 3 AVERAGE	178	235

See chart 9A-9N

10. Infrared (IRZB) Baseline
CTM-21C

ROLL#1-S	1.13	ROLL#5-E	1.08
ROLL#1-E	1.13	ROLL#6-S	1.11
ROLL#2-S	1.13	ROLL#6-E	1.10
ROLL#2-E	1.07	ROLL#7-S	1.15
ROLL#3-S	1.11	ROLL#7-E	1.14
ROLL#3-E	1.11	ROLL#8-S	----
ROLL#4-S	1.11	ROLL#8-E	----
ROLL#4-E	1.10	ROLL#9-S	----
ROLL#5-S	1.11	ROLL#9-E	----

NASA LOT# 3 AVERAGE 1.11

See chart 10A-10N

11. Environmental History

Date manufactured: 30 April 1986
Package in: Polyethylene bag supported in cardboard carton
Date shipped: 12 June 1986 in 40°F truck

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

12. Specific Gravity, Cured, Units
ASTM D792

ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
1.471	1.464	1.484	1.398
1.479	1.462	1.483	1.446
1.480	1.409	1.481	1.418
AVG. 1.477	1.445	1.483	1.421

ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
1.483	1.479	1.478	1.473	1.483	1.483	1.480
1.483	1.482	1.480	1.481	1.484	1.481	1.481
1.483	1.481	1.479	1.453	1.484	1.471	1.483
AVG. 1.483	1.481	1.479	1.469	1.484	1.478	1.481

ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
1.486	1.482	1.483	--	--	--	--
1.486	1.483	1.480	--	--	--	--
1.487	1.482	1.476	--	--	--	--
AVG. 1.486	1.482	1.480	--	--	--	--

NASA LOT# 3 AVERAGE 1.473

13a. Tensile Strength, ksi, WARP
FTMS 406-1011

ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
20.05	20.34	20.11	22.63
20.81	21.50	19.18	23.47
21.29	20.73	17.67	22.97
19.48	21.35	19.93	21.13
22.40	20.22	20.13	23.34
AVG. 20.80	20.83	19.41	22.71

ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
18.22	25.40	21.52	19.34	20.36	20.85	22.15
20.28	24.10	22.45	21.16	20.19	21.13	22.49
19.29	22.68	22.54	21.48	19.93	19.62	22.67
20.21	22.19	21.75	20.97	21.02	19.37	22.56
21.63	24.05	23.00	21.32	21.75	18.37	22.77
AVG. 19.93	23.68	22.25	20.85	20.65	19.87	22.53

ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
21.96	19.72	21.24	--	--	--	--
21.81	21.27	20.45	--	--	--	--
20.01	20.82	21.13	--	--	--	--
22.19	21.58	18.53	--	--	--	--
22.55	22.46	21.51	--	--	--	--
AVG. 21.71	21.17	20.57	--	--	--	--

NASA LOT# 3 AVERAGE 21.21

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

13b. Tensile Modulus, msi, WARP
FTMS 406-1011

ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
2.86	3.18	3.00	3.17
2.82	3.06	2.86	3.26
3.04	3.06	2.98	3.29
3.07	3.13	3.12	3.14
2.96	3.45	2.87	3.21
AVG. 2.95	3.18	2.97	3.21

ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
2.91	3.07	3.01	2.98	2.65	2.96	3.08
2.85	3.02	3.06	3.07	2.88	--	2.98
3.03	3.04	3.07	3.08	3.06	2.89	3.20
3.00	3.09	3.12	2.87	2.92	2.95	3.19
2.97	3.02	3.09	3.11	2.90	2.78	3.27
AVG. 2.95	3.05	3.07	3.02	2.88	2.90	3.14

ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
3.07	3.45	2.98	--	--	--	--
2.82	3.02	3.22	--	--	--	--
2.76	3.24	3.24	--	--	--	--
3.14	2.88	3.01	--	--	--	--
3.00	3.30	3.15	--	--	--	--
AVG. 2.96	3.18	3.12	--	--	--	--

NASA LOT# 3 AVERAGE 3.04

13c. Tensile Elongation, %, WARP
FTMS 406-1011

ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
1.05	.98	1.04	1.10
1.14	1.05	1.02	1.13
1.13	1.01	.97	1.12
1.00	1.01	--	1.05
1.27	.91	1.08	1.16
AVG. 1.12	.99	1.03	1.11

ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
.92	1.40	1.09	.93	1.08	1.11	1.19
1.05	1.33	1.17	1.08	1.11	--	1.20
.97	1.18	1.16	1.04	1.04	1.12	1.15
1.05	1.20	1.12	1.05	1.13	1.04	1.16
1.12	1.21	1.14	1.05	1.15	1.01	1.14
AVG. 1.02	1.26	1.14	1.03	1.10	1.07	1.17

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

13c. Tensile Elongation, %, WARP (CONTINUED)
FTMS 406-1011

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	1.13	1.03	1.07	--	--	--	--
	1.17	1.14	1.02	--	--	--	--
	1.09	1.14	1.04	--	--	--	--
	.96	1.13	.96	--	--	--	--
	1.15	1.16	1.11	--	--	--	--
AVG.	1.10	1.12	1.04	--	--	--	--

NASA LOT# 3 AVERAGE 1.09

14a. Flexural Strength, ksi, WARP
FTMS 406-1031

	ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
	36.08	36.71	33.49	40.68
	35.98	34.90	27.46	36.14
	36.75	33.06	33.09	39.13
	36.95	41.06	34.58	39.00
	37.68	42.95	34.37	36.58
AVG.	36.69	37.73	32.60	38.30

	ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
	35.36	40.63	34.48	35.38	31.74	29.50	35.52
	34.27	44.99	35.69	33.44	35.62	29.70	33.49
	33.85	40.27	32.21	33.79	38.83	32.36	34.20
	37.60	39.47	32.70	32.90	39.58	35.57	34.03
	36.29	40.14	34.42	34.07	36.80	29.64	33.66
AVG.	35.47	41.10	33.90	33.91	36.51	31.35	34.18

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	30.63	29.66	33.66	--	--	--	--
	34.28	34.41	29.79	--	--	--	--
	37.18	31.99	37.29	--	--	--	--
	38.36	27.22	34.08	--	--	--	--
	33.43	31.09	34.94	--	--	--	--
AVG.	34.78	30.87	33.95	--	--	--	--

NASA LOT# 3 AVERAGE 35.10

14b. Flexural Modulus, msi, WARP
FTMS 406-1031

	ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
	2.68	2.82	2.61	2.69
	2.50	2.80	2.70	2.68
	2.84	2.89	2.61	2.81
	2.99	2.73	2.66	2.84
	2.58	3.11	2.71	2.81
AVG.	2.72	2.87	2.66	2.77

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

14b. Flexural Modulus, msi, WARP (CONTINUED)
FTMS 406-1031

	ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
	2.84	2.92	2.60	2.43	3.06	2.82	2.31
	2.68	2.81	2.42	2.78	3.17	2.98	2.61
	2.57	2.84	2.66	2.76	3.09	2.21	2.54
	2.72	2.70	2.47	2.59	3.35	2.32	2.73
	2.90	2.83	2.74	2.58	3.27	2.72	2.71
AVG.	2.74	2.82	2.58	2.63	3.19	2.61	2.58

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	2.86	2.75	1.93	--	--	--	--
	2.73	2.87	2.57	--	--	--	--
	2.64	2.71	2.94	--	--	--	--
	2.82	2.32	2.75	--	--	--	--
	2.47	2.69	2.84	--	--	--	--
AVG.	2.70	2.67	2.61	--	--	--	--

NASA LOT# 3 AVERAGE 2.72

15a. Compressive Strength, ksi, WARP
FTMS 406-1021

	ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
	62.60	48.73	51.96	59.70
	61.55	64.07	61.36	62.56
	59.06	63.42	57.80	58.95
	60.74	64.43	63.24	57.13
	57.41	58.27	62.74	55.63
AVG.	60.27	59.78	59.42	58.79

	ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
	60.25	51.89	48.83	59.23	51.62	52.12	51.74
	52.48	52.59	60.64	63.44	58.09	56.05	55.25
	43.92	64.72	54.38	61.55	53.18	50.77	46.50
	59.52	63.44	66.11	60.69	54.76	61.83	46.53
	61.08	62.13	67.95	53.50	48.54	59.22	53.16
AVG.	55.45	58.95	59.58	59.68	53.24	56.00	50.63

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	56.89	56.95	54.21	--	--	--	--
	49.98	62.30	56.45	--	--	--	--
	54.63	52.83	59.29	--	--	--	--
	49.56	56.31	54.85	--	--	--	--
	56.00	54.49	54.60	--	--	--	--
AVG.	53.41	56.58	55.88	--	--	--	--

NASA LOT# 3 AVERAGE 56.98

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

15b. Compressive, Modulus, msi, WARP
FTMS 406-1021

ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
3.19	3.07	3.00	3.22
3.25	3.12	3.07	3.09
2.78	3.06	3.13	--
3.37	3.09	3.19	2.98
3.05	3.08	3.38	3.04
AVG. 3.13	3.08	3.15	3.08

ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
3.20	2.97	2.99	3.16	3.42	3.07	3.14
3.08	2.90	2.96	3.20	3.38	3.32	3.23
2.94	2.90	3.01	3.15	3.46	3.05	3.03
3.13	2.94	3.06	3.11	3.31	3.09	3.04
3.24	2.92	3.47	3.05	3.37	3.02	3.03
AVG. 3.12	2.93	3.10	3.13	3.39	3.11	3.09

ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
3.24	3.07	3.06	--	--	--	--
3.33	3.21	3.15	--	--	--	--
3.11	3.10	3.36	--	--	--	--
3.06	3.12	3.09	--	--	--	--
3.12	3.09	3.14	--	--	--	--
AVG. 3.17	3.12	3.16	--	--	--	--

NASA LOT# 3 AVERAGE 3.13

16. Double Shear Strength, ksi
FTMS 406-1041A

ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
5.09	6.26	4.57	4.15
6.15	6.53	3.98	5.05
5.36	5.77	4.80	5.08
5.97	6.09	4.72	4.42
4.32	6.15	4.36	4.49
AVG. 5.38	6.16	4.49	4.64

ROLL#3 START	ROLL#3 END	ROLL#4 START	ROLL#4 END	ROLL#5 START	ROLL#5 END	ROLL#6 START
5.74	4.86	4.35	4.32	5.86	5.35	5.23
5.66	3.51	4.87	4.56	4.51	4.66	4.85
4.71	4.72	4.94	4.48	4.90	5.05	5.00
5.54	4.77	4.56	4.26	5.23	4.83	4.82
5.00	4.15	5.77	4.34	5.65	5.28	4.76
AVG. 5.33	4.40	4.90	4.39	5.23	5.03	4.93

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

16. Double Shear Strength, ksi (CONTINUED)
FTMS 406-1041A

ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
4.82	5.69	5.56	--	--	--	--
5.89	5.66	4.75	--	--	--	--
4.51	4.13	4.59	--	--	--	--
5.35	4.64	4.79	--	--	--	--
5.65	4.19	5.53	--	--	--	--
AVG. 5.24	4.86	5.04	--	--	--	--

NASA LOT# 3 AVERAGE 5.00

17. Barcol Hardness, Units
ASTM D-2583
(Average of 10 determinations)

ROLL#1-S	72.0	ROLL#5-E	74.6
ROLL#1-E	75.0	ROLL#6-S	73.7
ROLL#2-S	72.9	ROLL#6-E	73.3
ROLL#2-E	70.4	ROLL#7-S	74.0
ROLL#3-S	71.0	ROLL#7-E	73.0
ROLL#3-E	73.0	ROLL#8-S	--
ROLL#4-S	72.0	ROLL#8-E	--
ROLL#4-E	73.0	ROLL#9-S	--
ROLL#5-S	71.2	ROLL#9-E	--

NASA LOT# 3 AVERAGE 72.8

18. Residual Volatiles, %
PTM-98

ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
1.66	2.00	2.16	1.57
1.66	1.95	2.16	1.60
1.67	1.96	2.15	1.59
AVG. 1.66	1.97	2.16	1.58

ROLL#3 END	ROLL#3 START	ROLL#4 END	ROLL#4 START	ROLL#5 END	ROLL#5 START	ROLL#6 END
1.78	1.93	1.99	1.50	2.03	1.92	1.68
1.81	1.88	2.00	1.52	1.99	1.83	1.63
1.75	1.90	1.97	1.52	1.98	1.81	1.63
AVG. 1.78	1.90	1.99	1.52	2.00	1.85	1.64

ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
1.74	1.96	1.85	--	--	--	--
1.78	1.97	1.98	--	--	--	--
1.69	1.97	1.89	--	--	--	--
AVG. 1.74	1.97	1.91	--	--	--	--

NASA LOT# 3 AVERAGE 1.83

19. Resin Content, Pyrolysis, %
CTM-14B

ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
33.99	32.31	34.63	32.32
34.39	32.61	33.77	32.51
34.76	32.99	35.23	31.80
AVG. 34.38	32.63	34.54	32.21

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

19. Resin Content, Pyrolysis, % (CONTINUED)
CTM-14B

	ROLL#3 END	ROLL#3 START	ROLL#4 END	ROLL#4 START	ROLL#5 END	ROLL#5 START	ROLL#6 END
	34.37	33.97	32.82	32.55	38.30	33.35	35.07
	35.43	34.28	33.11	31.95	33.77	34.08	34.38
	33.90	33.65	31.73	32.64	33.52	34.57	35.74
AVG.	34.57	33.97	32.55	32.38	35.20	34.00	35.06

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	34.44	35.86	34.04	--	--	--	--
	34.28	36.49	34.49	--	--	--	--
	34.66	36.73	34.25	--	--	--	--
AVG.	34.46	36.36	34.26	--	--	--	--

NASA LOT# 3 AVERAGE 34.04

20. Acetone Extraction, %
CTM-18A

	ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
	2.56	.99	.25	1.43
	.76	.08	-1.85	1.59
	1.90	1.74	.99	1.28
AVG.	1.74	.88	- .20	1.43

	ROLL#3 END	ROLL#3 START	ROLL#4 END	ROLL#4 START	ROLL#5 END	ROLL#5 START	ROLL#6 END
	.33	.94	1.23	2.44	1.50	1.89	-.46
	.16	2.46	1.32	-.60	1.81	1.55	-5.36
	1.10	.33	1.58	.90	2.35	1.80	1.71
AVG.	.53	1.24	1.38	.91	1.89	1.75	-1.37

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	-6.57	-6.47	-11.20	--	--	--	--
	.05	-6.84	-6.84	--	--	--	--
	1.47	-4.12	-6.83	--	--	--	--
AVG.	-1.69	-5.81	-8.29	--	--	--	--

NASA LOT # 3 AVERAGE -.40

21a. CTE, in/in °F, with PLY
PTM-61B

	ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
	5.09	5.07	5.28	5.74
	4.91	5.68	5.74	5.30
AVG.	5.00	5.38	5.51	5.52

	ROLL#3 END	ROLL#3 START	ROLL#4 END	ROLL#4 START	ROLL#5 END	ROLL#5 START	ROLL#6 END
	3.64	3.98	4.79	3.36	4.31	4.80	5.76
	4.86	5.55	5.67	5.34	5.43	5.76	6.49
AVG.	4.25	4.77	5.23	4.32	4.87	5.28	6.13

FM 5055B NASA LOT# 3 U.S.P. LOT# C02133

21a. CTE, in/in •F, with PLY (CONTINUED)
PTM-61B

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	4.58	5.36	3.90	--	--	--	--
	5.36	5.90	5.05	--	--	--	--
AVG.	4.97	5.63	4.48	--	--	--	--

NASA LOT#3 AVERAGE 5.09

21b. CTE, in/in •F, Crossply
PTM-61B

	ROLL#1 START	ROLL#1 END	ROLL#2 START	ROLL#2 END
	7.05	9.01	6.95	6.48
	5.45	9.08	7.72	8.42
AVG.	6.25	9.05	7.34	7.45

	ROLL#3 END	ROLL#3 START	ROLL#4 END	ROLL#4 START	ROLL#5 END	ROLL#5 START	ROLL#6 END
	4.86	7.48	6.89	7.43	8.20	8.48	11.10
	7.72	8.82	8.75	5.88	6.68	7.12	10.58
AVG.	6.29	8.15	7.82	6.66	7.44	7.80	10.84

	ROLL#6 END	ROLL#7 START	ROLL#7 END	ROLL#8 START	ROLL#8 END	ROLL#9 START	ROLL#9 END
	10.08	9.08	8.48	--	--	--	--
	7.52	9.01	9.02	--	--	--	--
AVG.	8.80	9.05	8.75	--	--	--	--

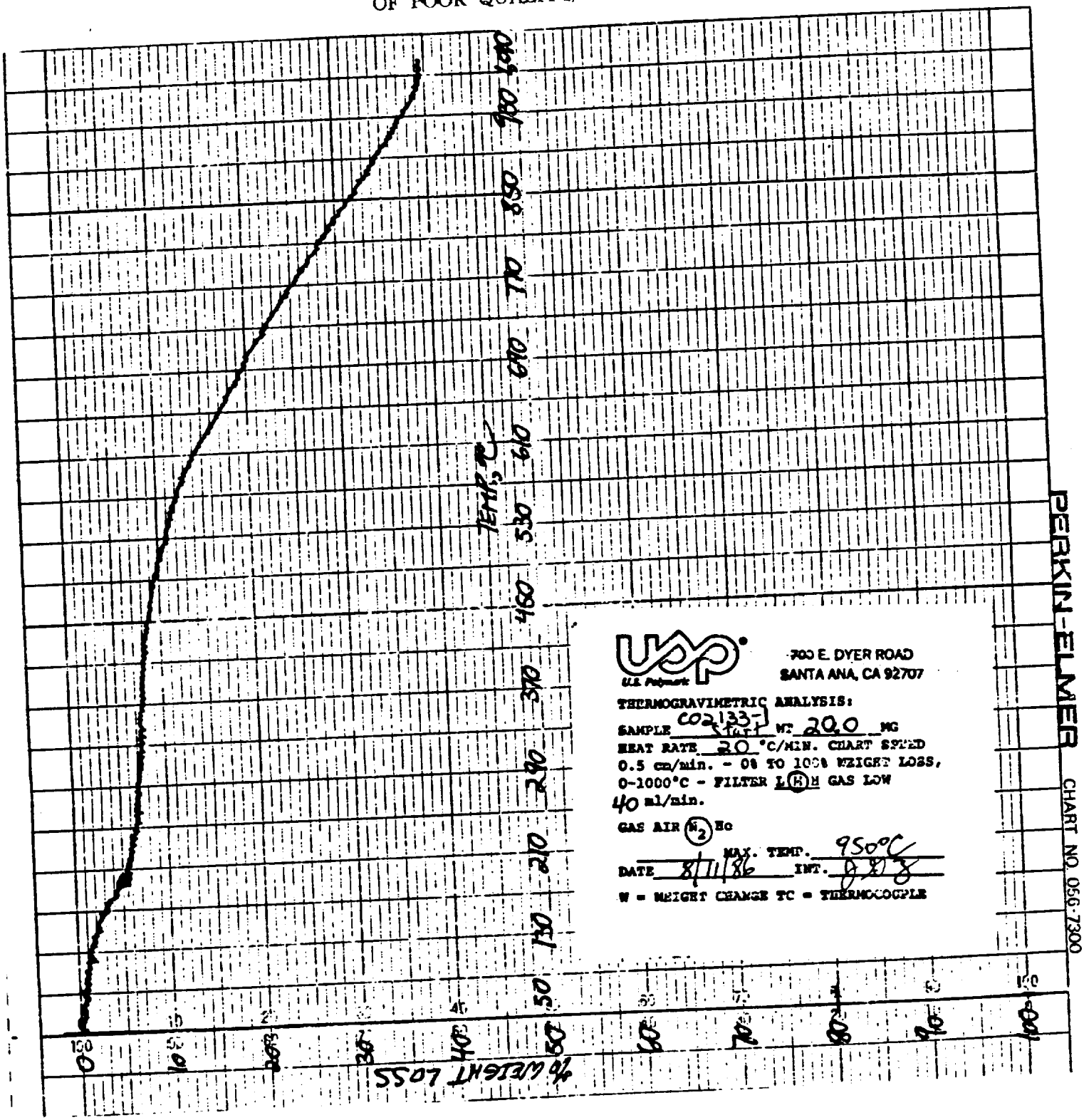
NASA LOT# 3 AVERAGE 7.98

See chart 21A-21N

U.S. Polymeric

Hamid M. Quraishi

Hamid M. Quraishi, Manager
Quality Assurance Department



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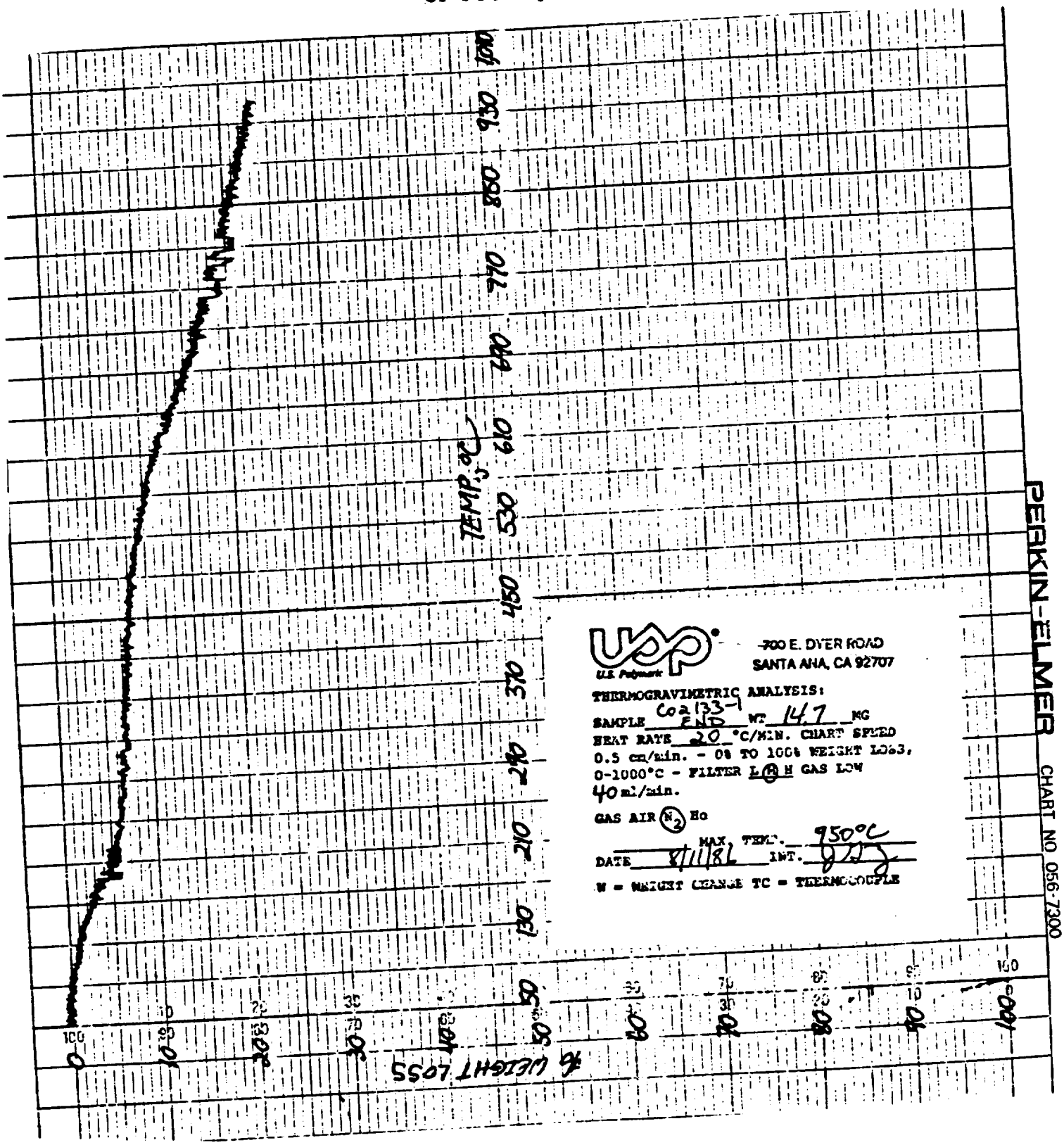

USP U.S. Polymeric
700 E. DYER ROAD
SANTA ANA, CA 92707

THERMOGRAVIMETRIC ANALYSIS:
SAMPLE Co2133-1 END WT. 14.7 MG
HEAT RATE 20 °C/MIN. CHART SPEED
0.5 cm/min. - 0% TO 100% WEIGHT LOSS,
0-1000°C - FILTER L M H GAS LOW
40 ml/min.
GAS AIR (N2) He
MAX. TEMP. 950°C
DATE 8/11/82 INT. 925
W = WEIGHT CHANGE TC = THERMOCOUPLE

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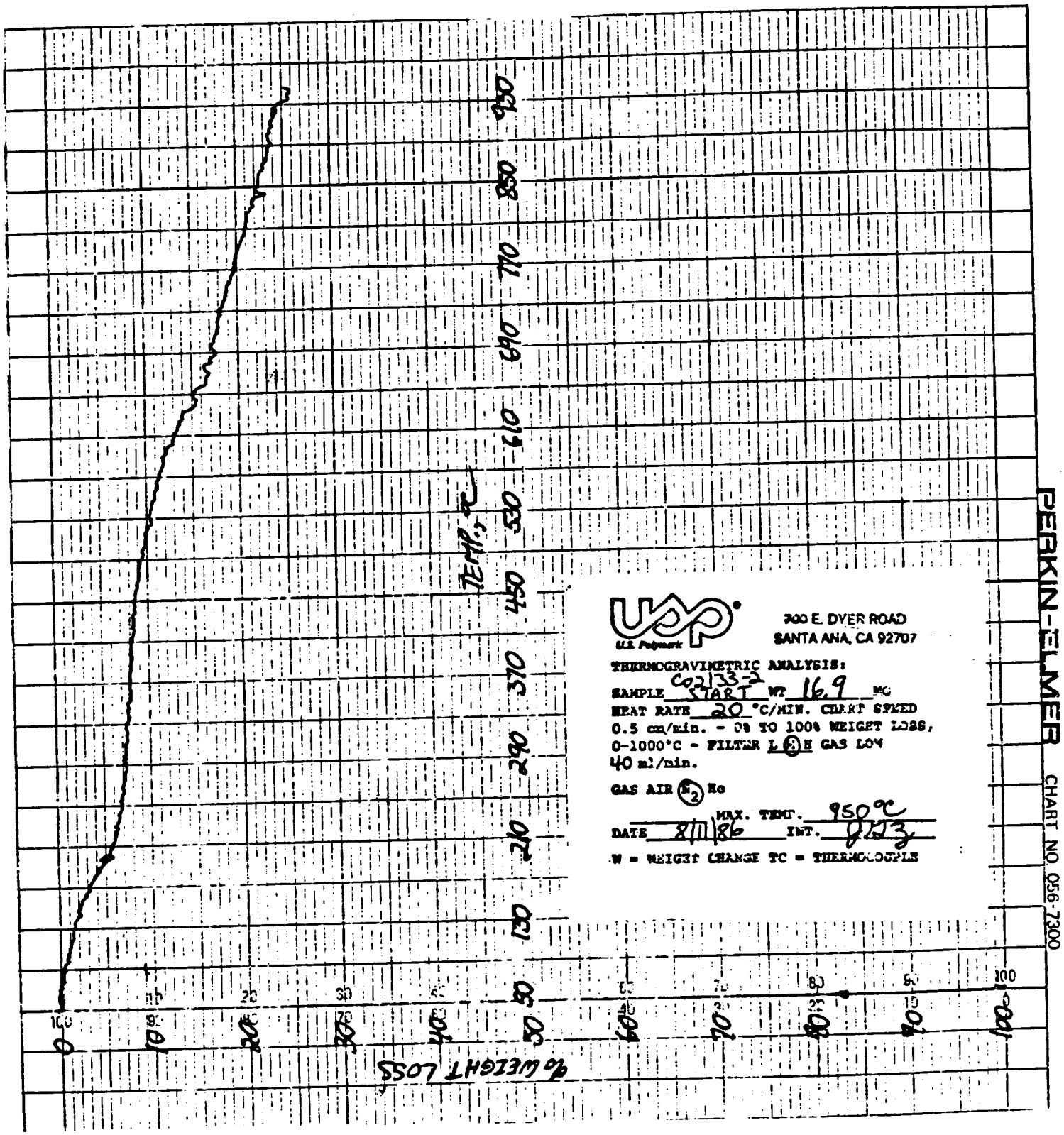

USP U.S. Polymeric
700 E. DYER ROAD
SANTA ANA, CA 92707

THERMOGRAVIMETRIC ANALYSIS:
SAMPLE CO2133-2 START WT 16.9 MG
HEAT RATE 20 °C/MIN. CHART SPEED
0.5 cm/min. - 0% TO 100% WEIGHT LOSS,
0-1000°C - FILTER L (H) GAS LOW
40 ml/min.
GAS AIR (N2) He
MAX. TEMP. 950°C
DATE 8/11/86 INT. 8223
W = WEIGHT CHANGE TC = THERMOCOUPLE

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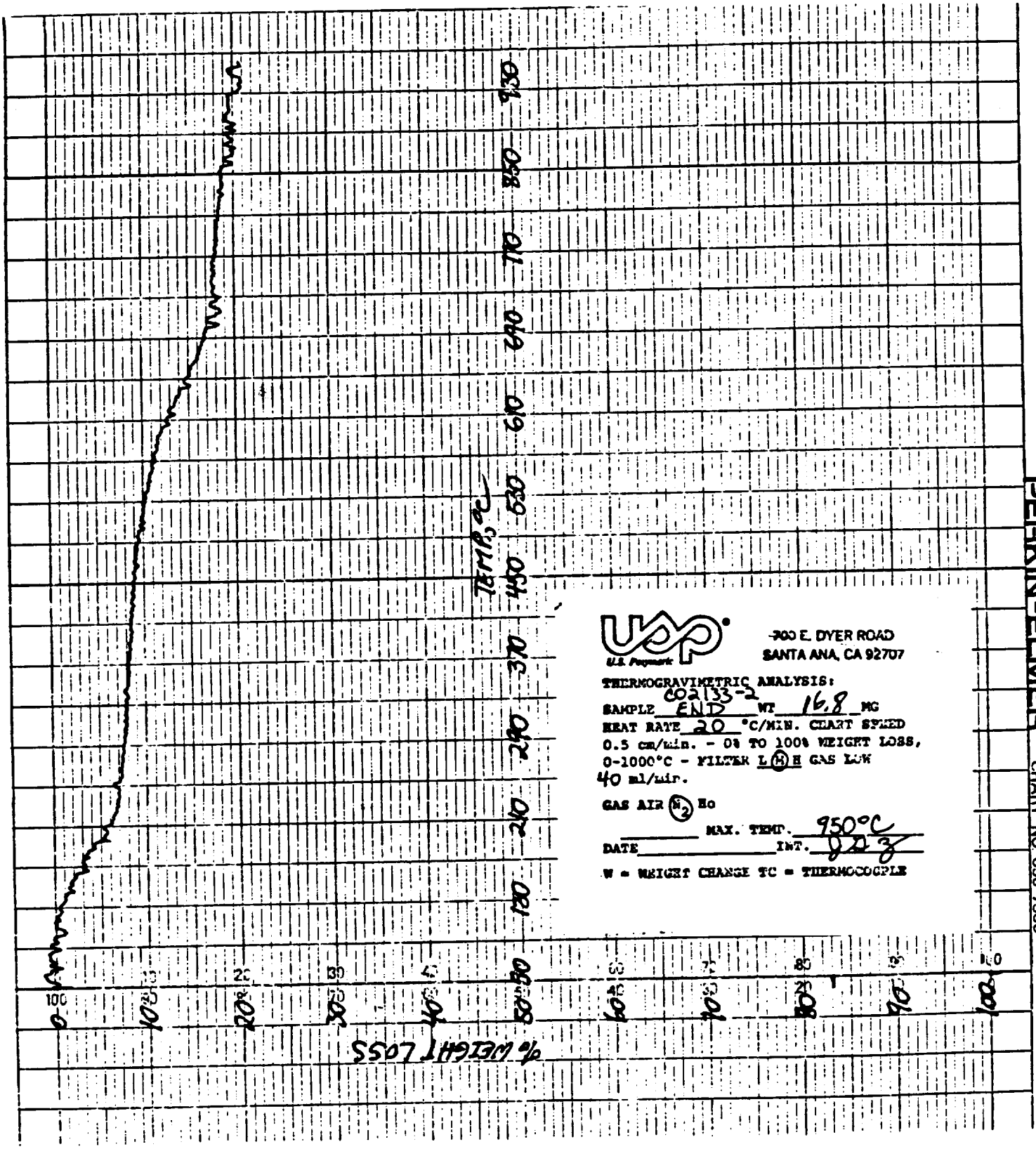

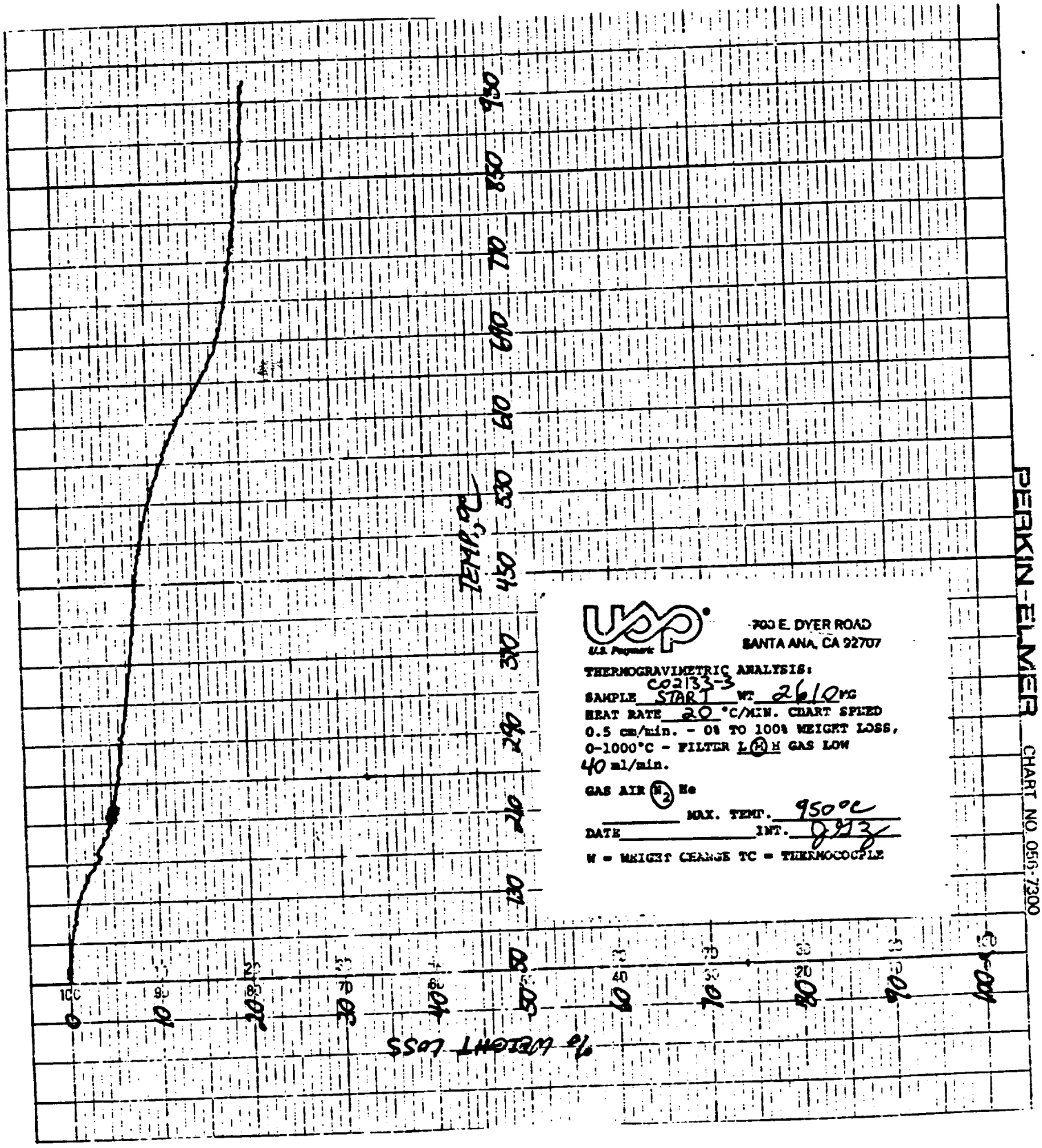

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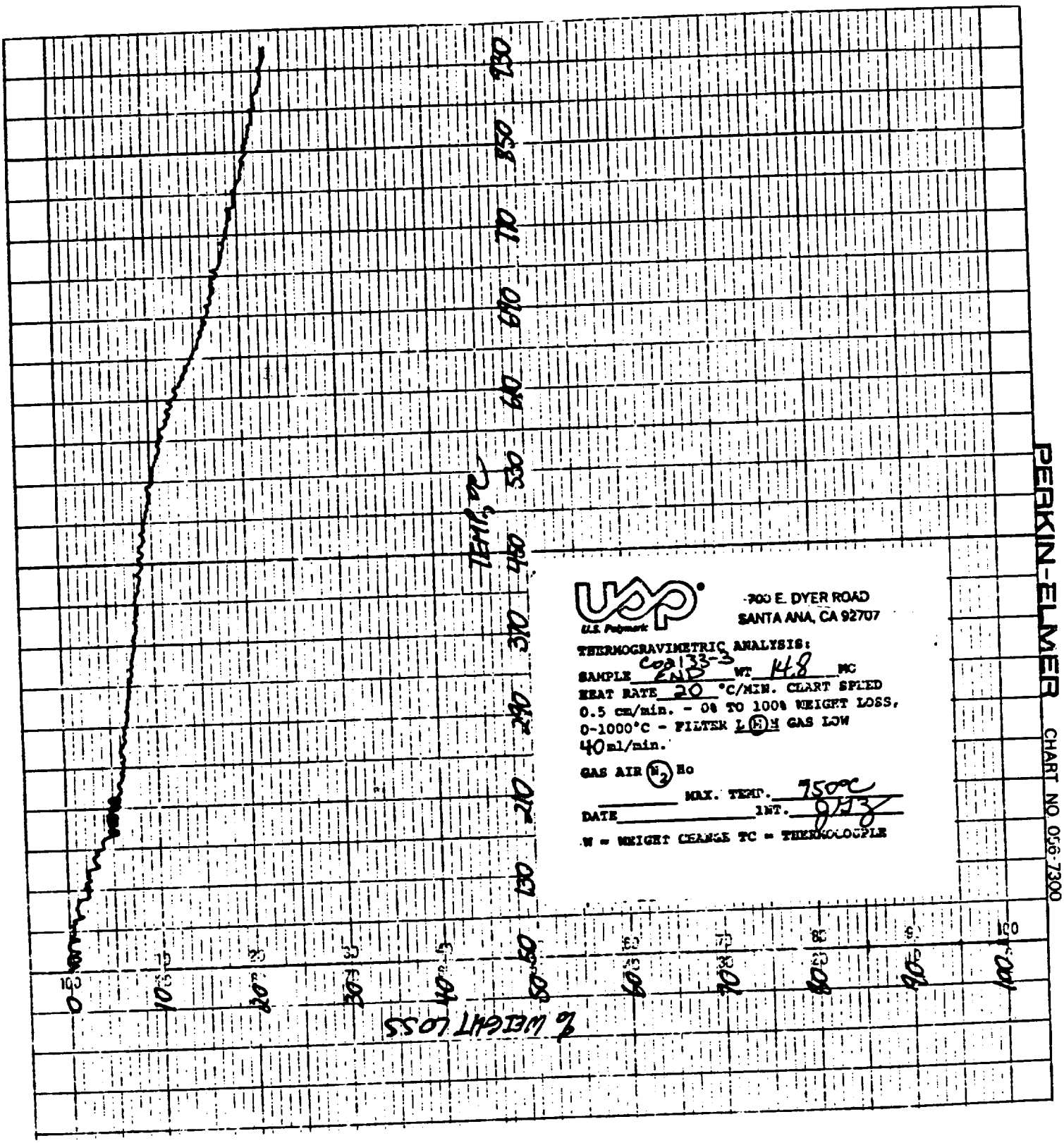

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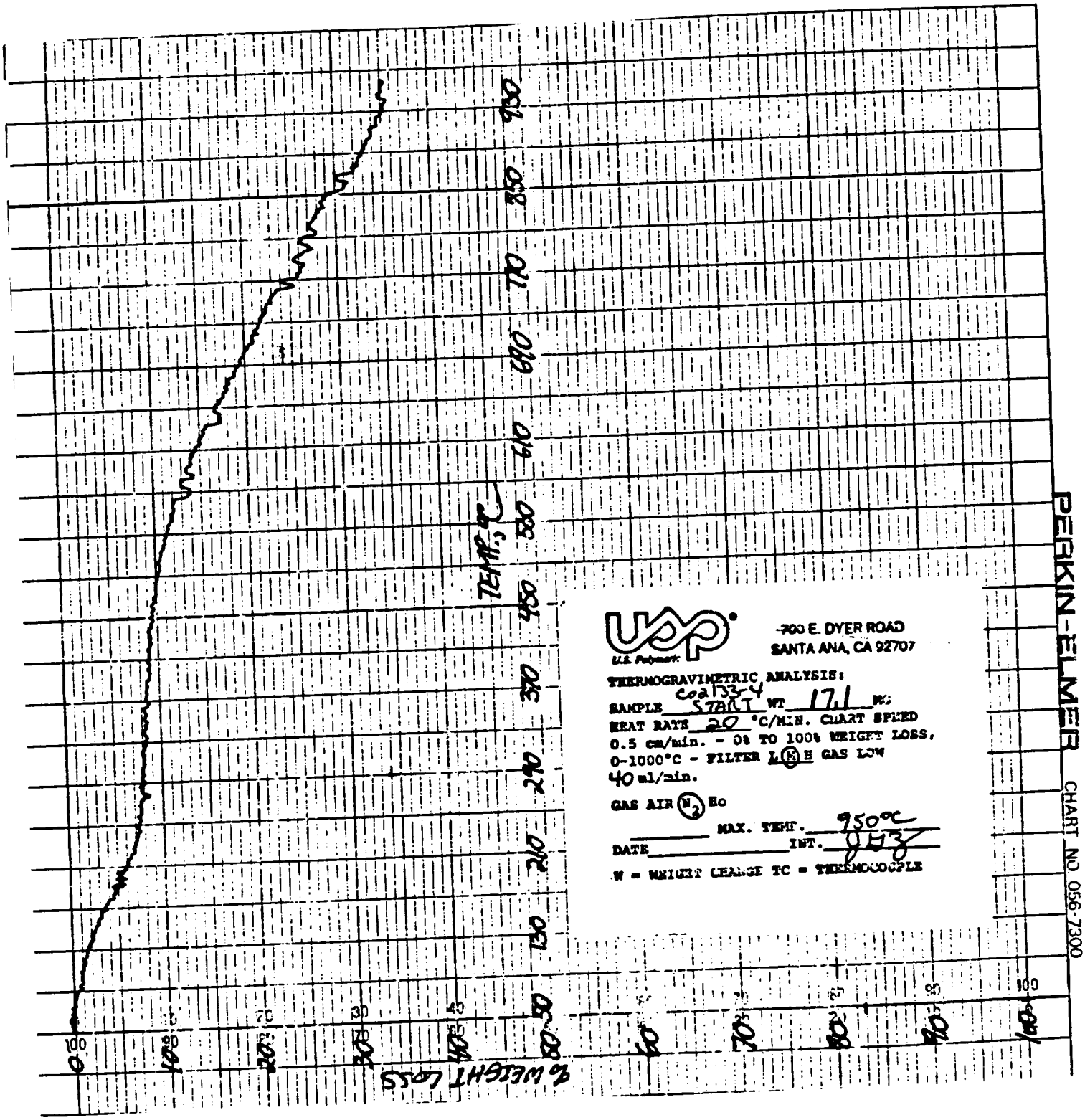

CHART 8H

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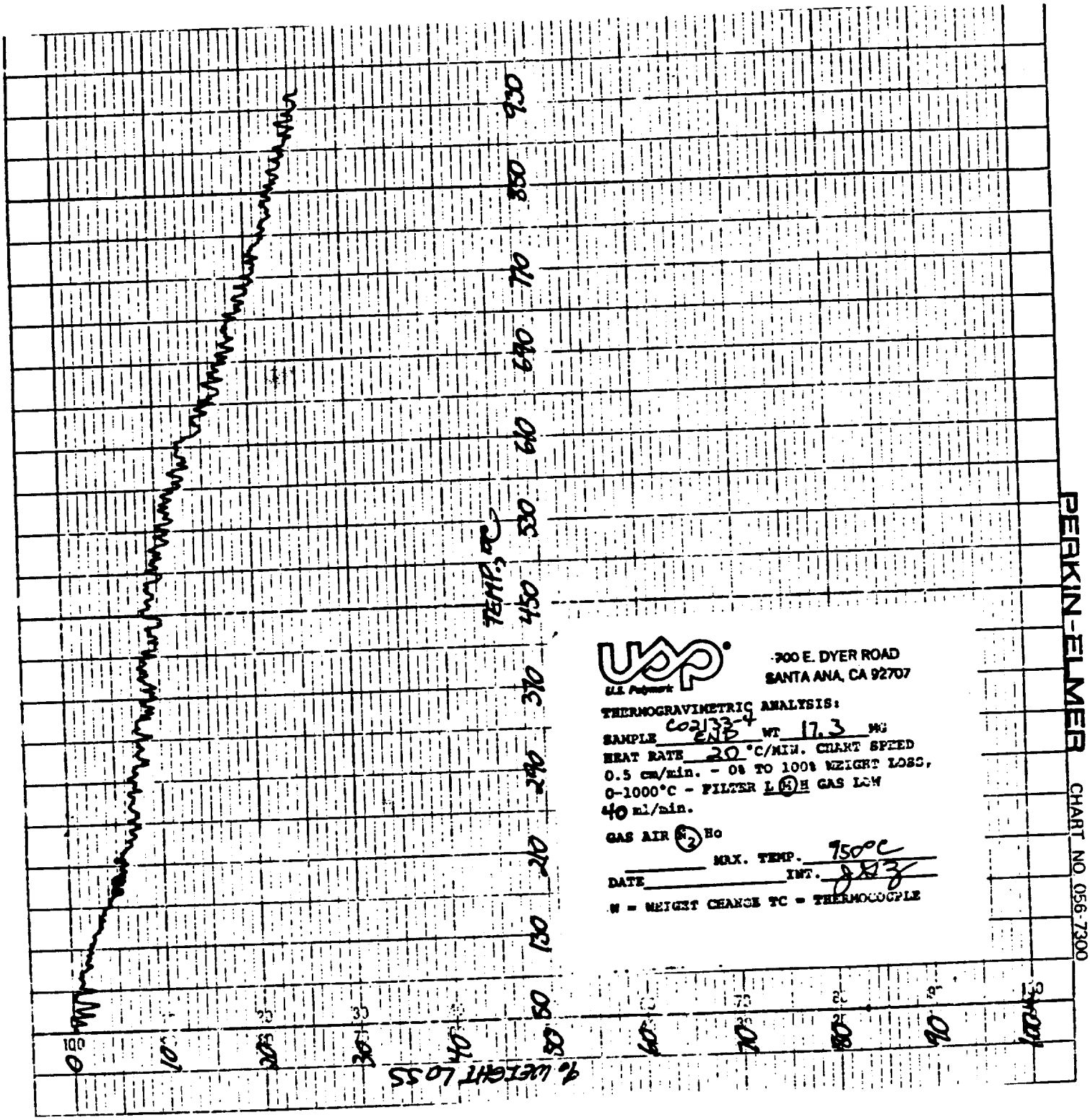

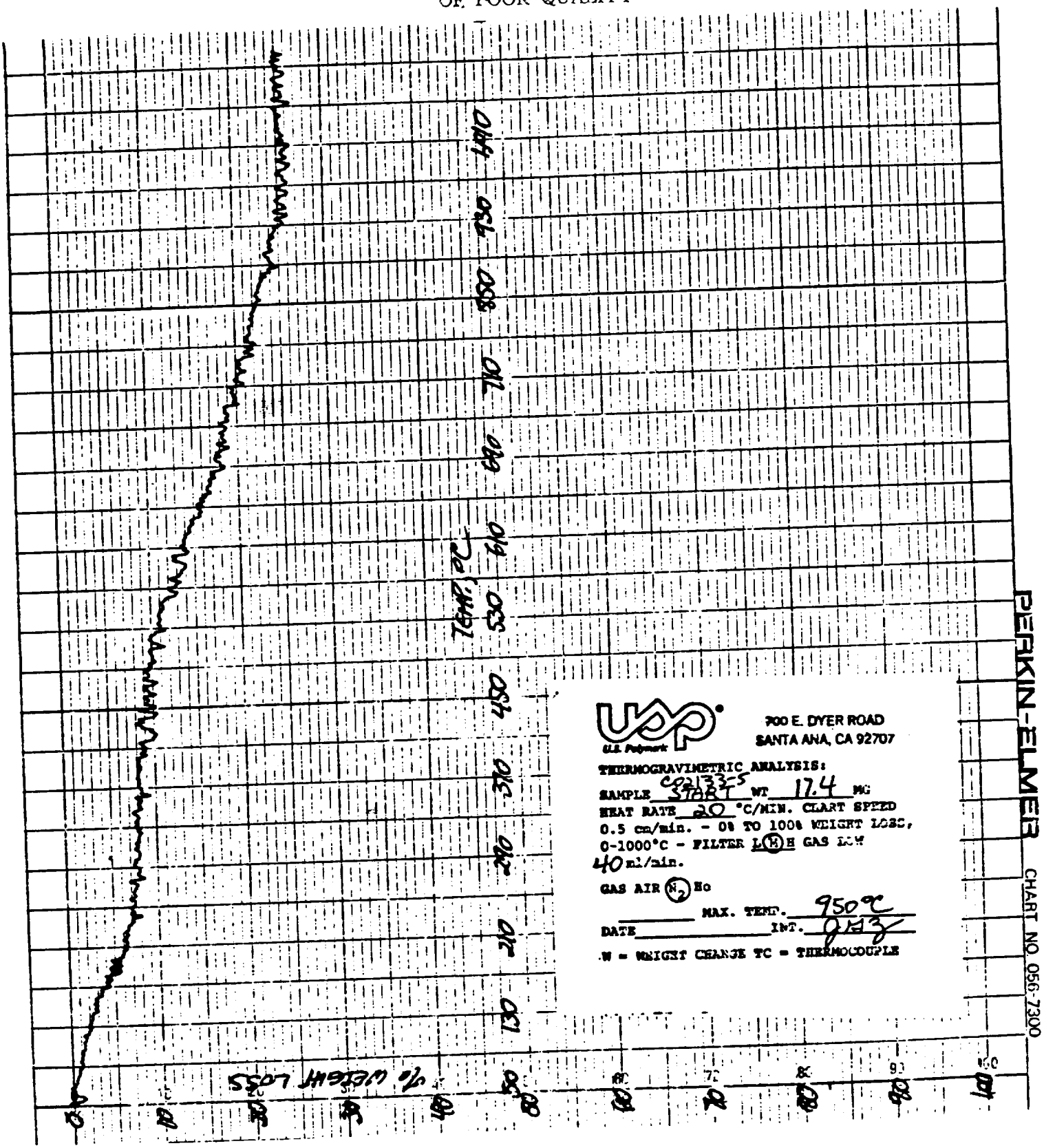

USP U.S. Polymeric
700 E. DYER ROAD
SANTA ANA, CA 92707

THERMOGRAVIMETRIC ANALYSIS:
SAMPLE C92133-5 START WT 17.4 MG
HEAT RATE 20 °C/MIN. CHART SPEED
0.5 cm/min. - 0% TO 100% WEIGHT LOSS,
0-1000°C - FILTER L (M) H GAS FLOW
40 ml/min.
GAS AIR (N2) He
MAX. TEMP. 950°C
DATE INT. 0.133
W = WEIGHT CHANGE TC = THERMOCOUPLE

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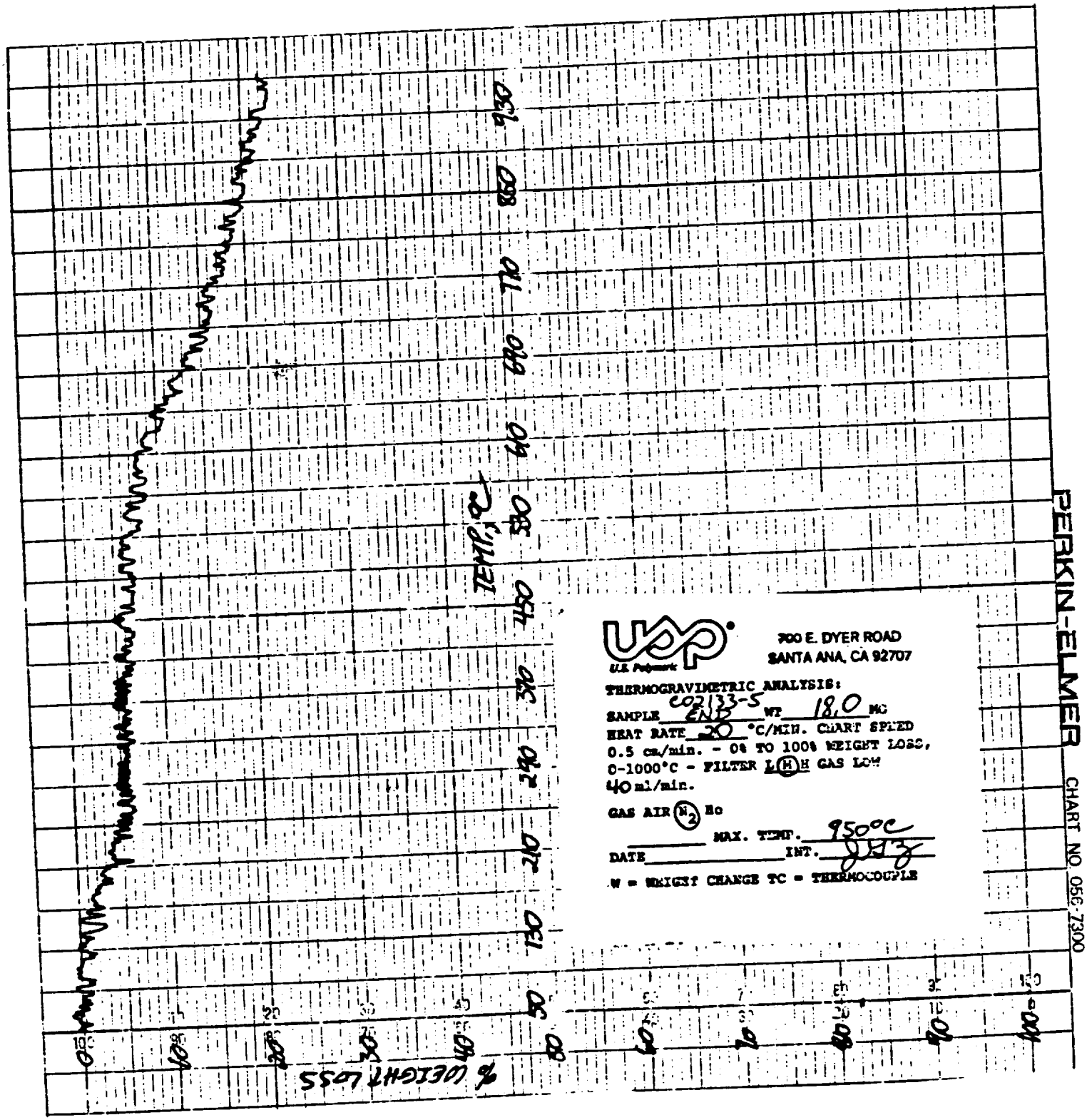

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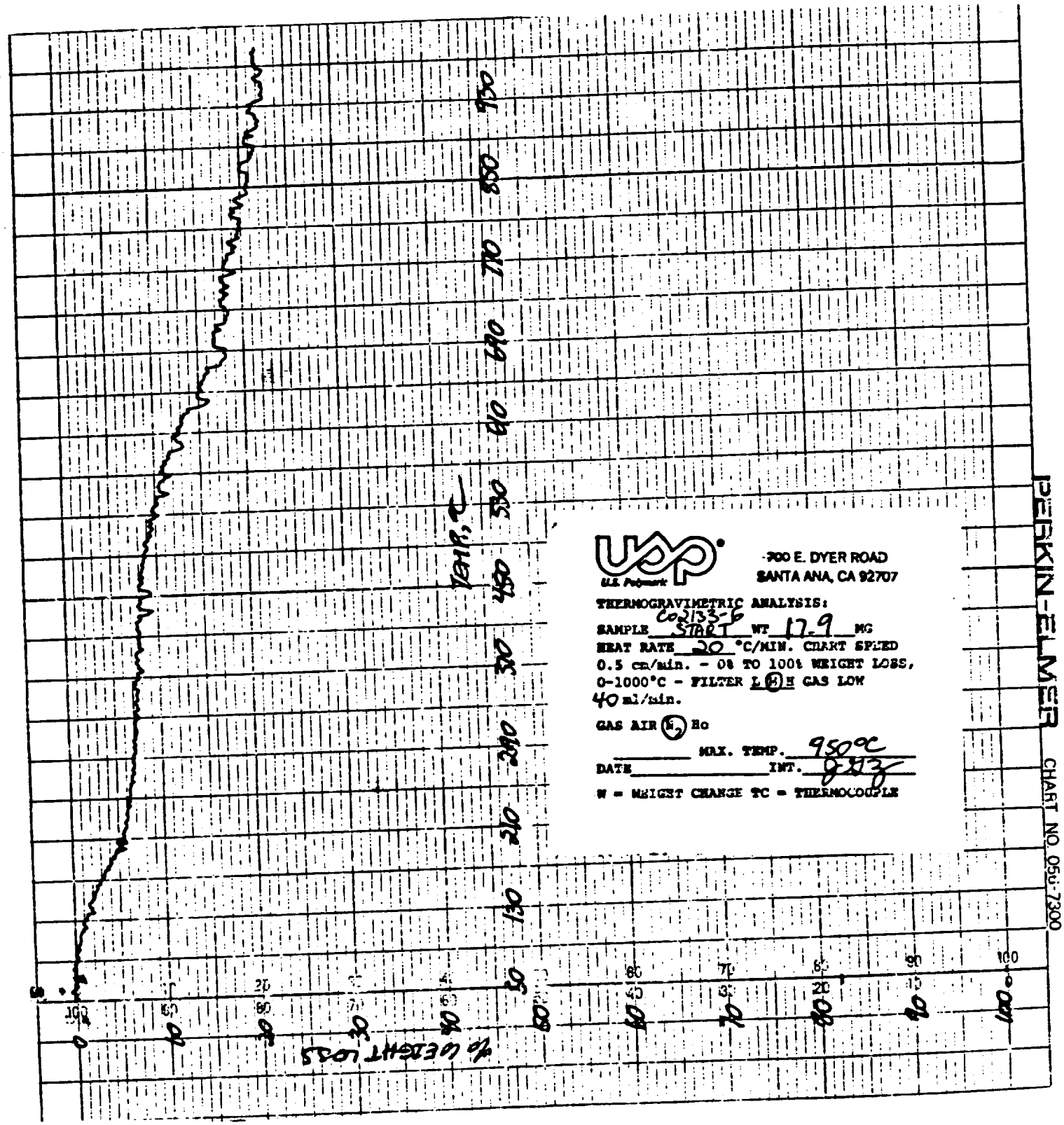

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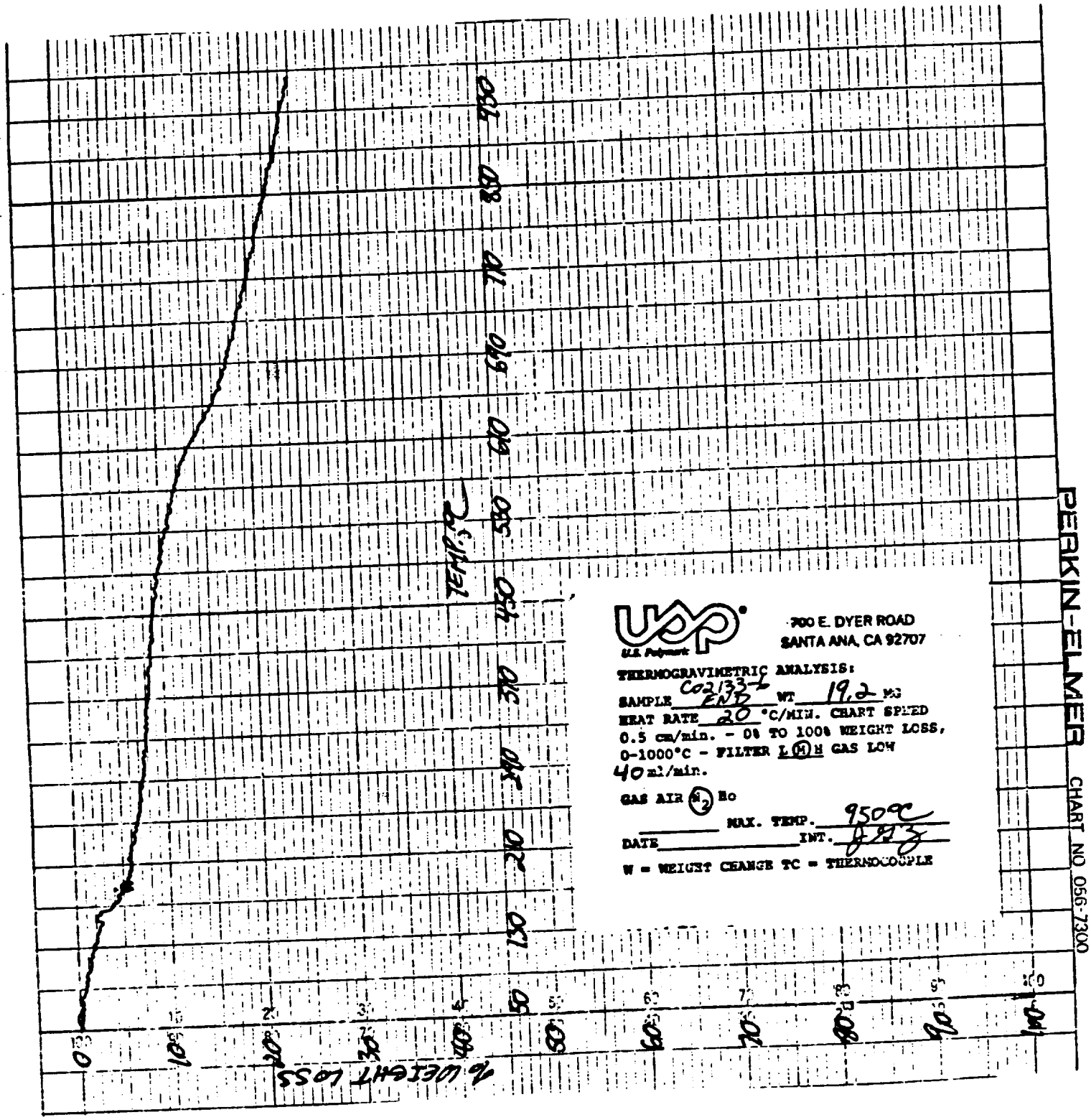

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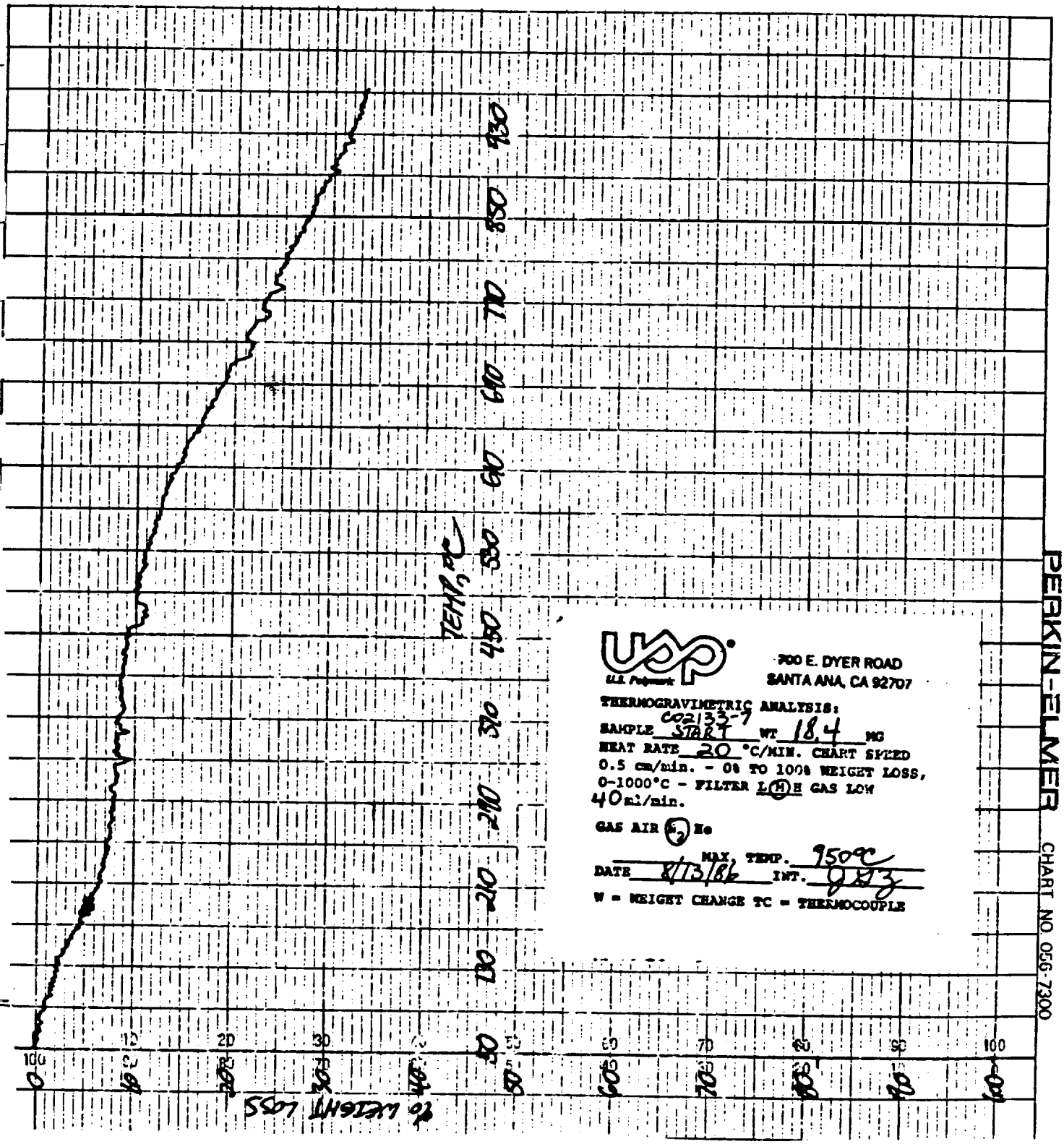

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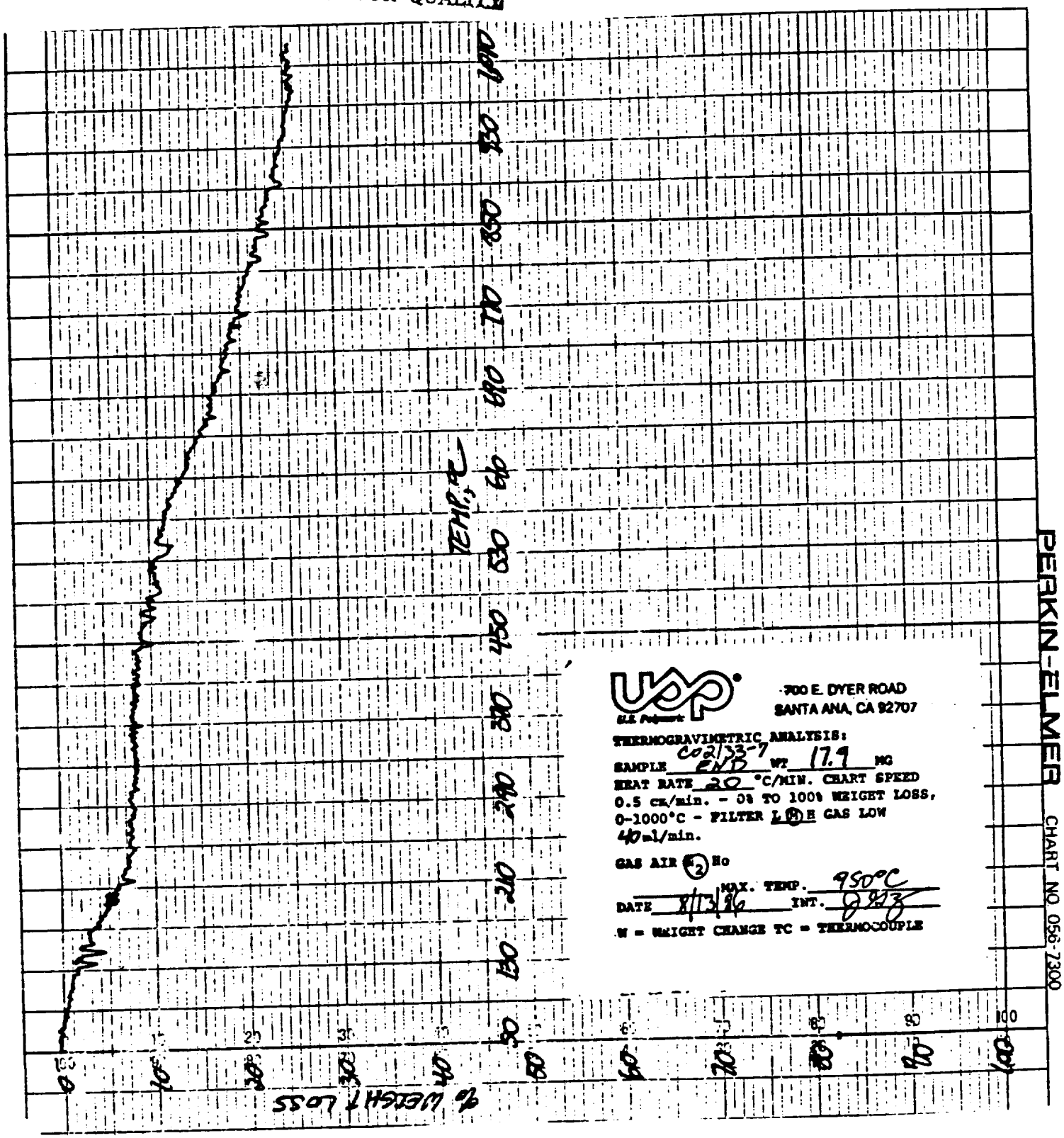


700 E. DYER ROAD
SANTA ANA, CA 92707

THERMOGRAVIMETRIC ANALYSIS:
SAMPLE CO2133-7 WT 17.9 MG
HEAT RATE 20 °C/MIN. CHART SPEED
0.5 cm/min. - 0% TO 100% WEIGHT LOSS,
0-1000°C - FILTER L (H) E GAS LOW
40 ml/min.
GAS AIR (N2) He
MAX. TEMP. 950°C
DATE 8/13/96 INT. 0.833
W = WEIGHT CHANGE TC = THERMOCOUPLE

CHART 9A

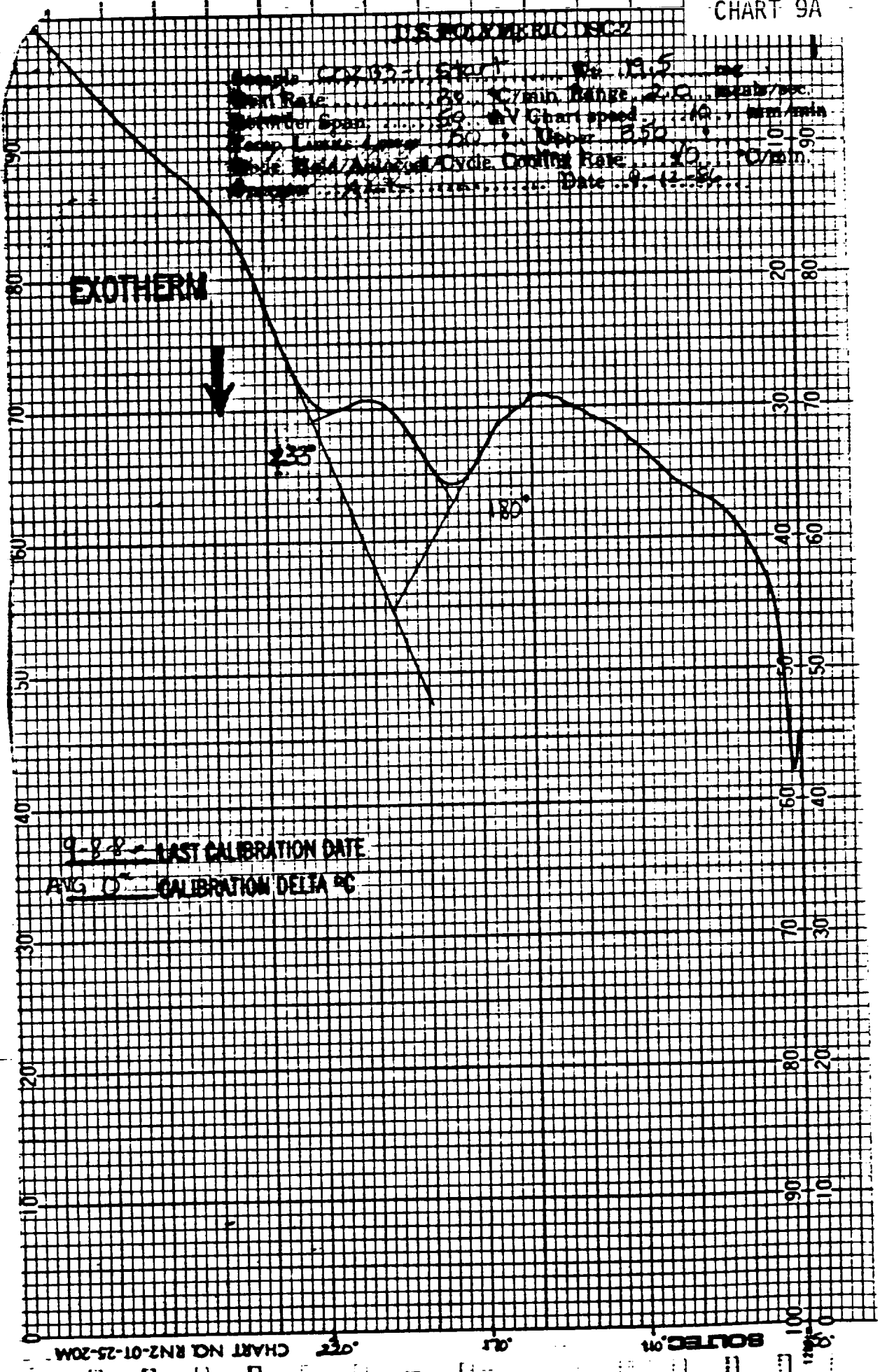


CHART 9B

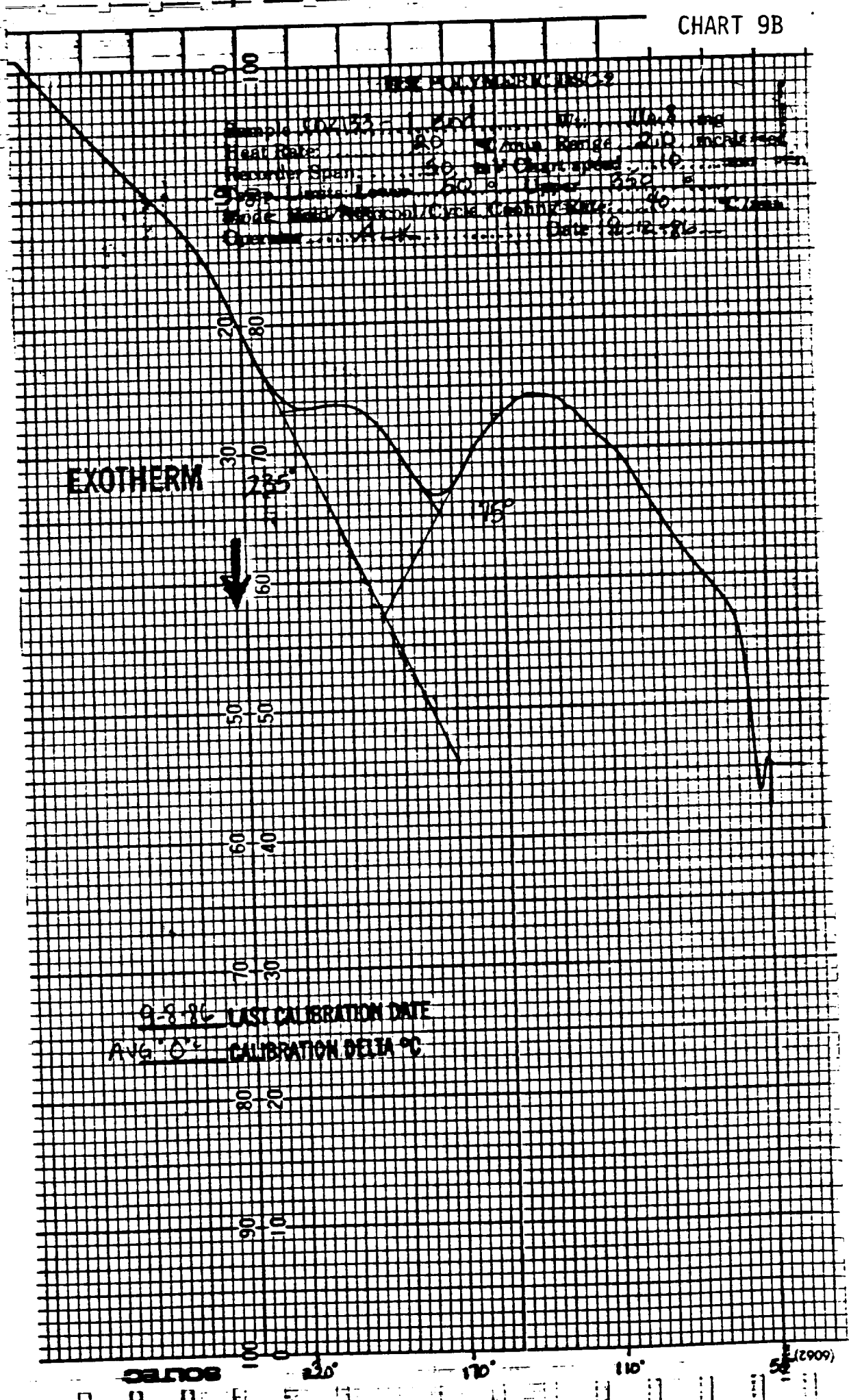


CHART 9C

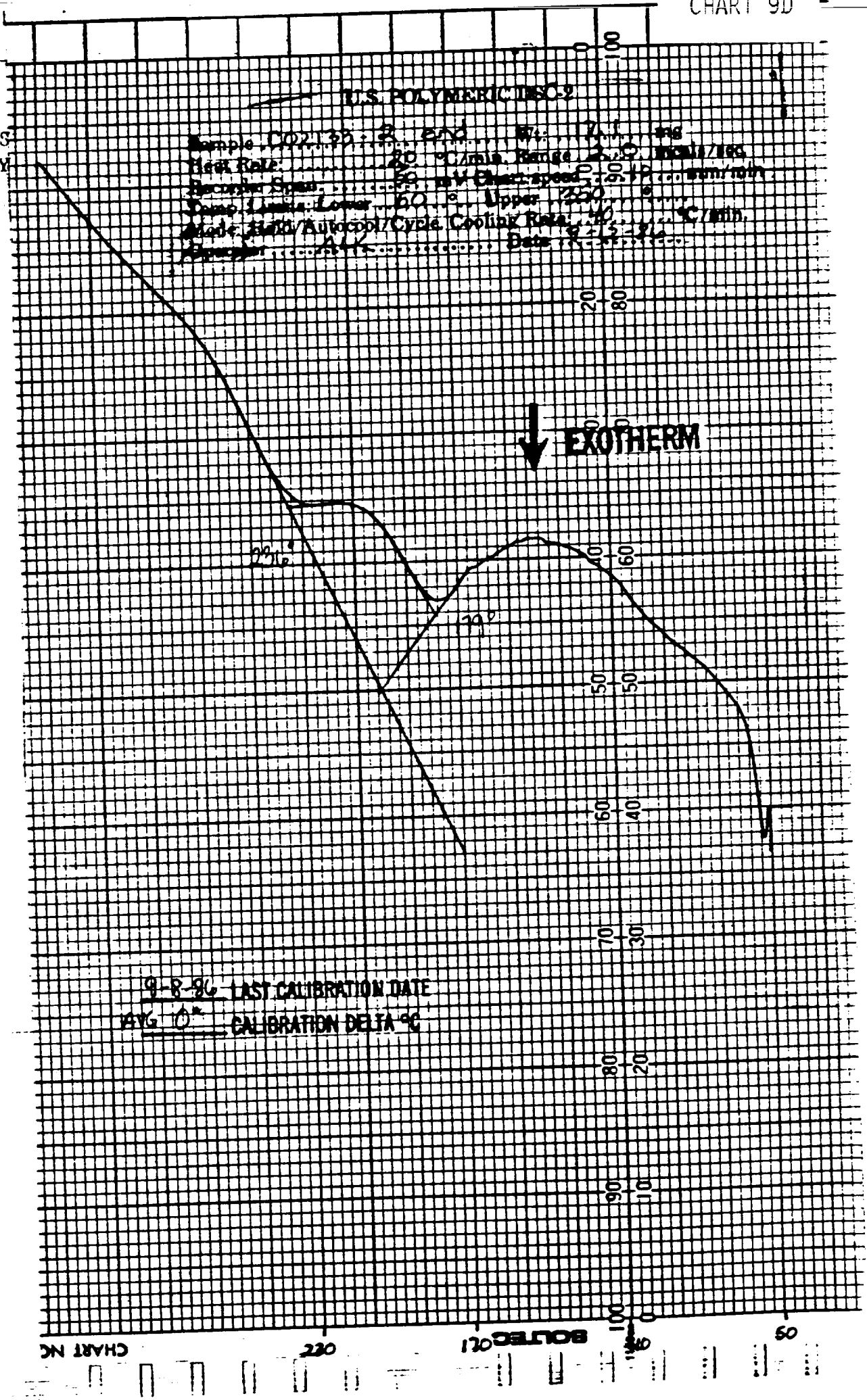
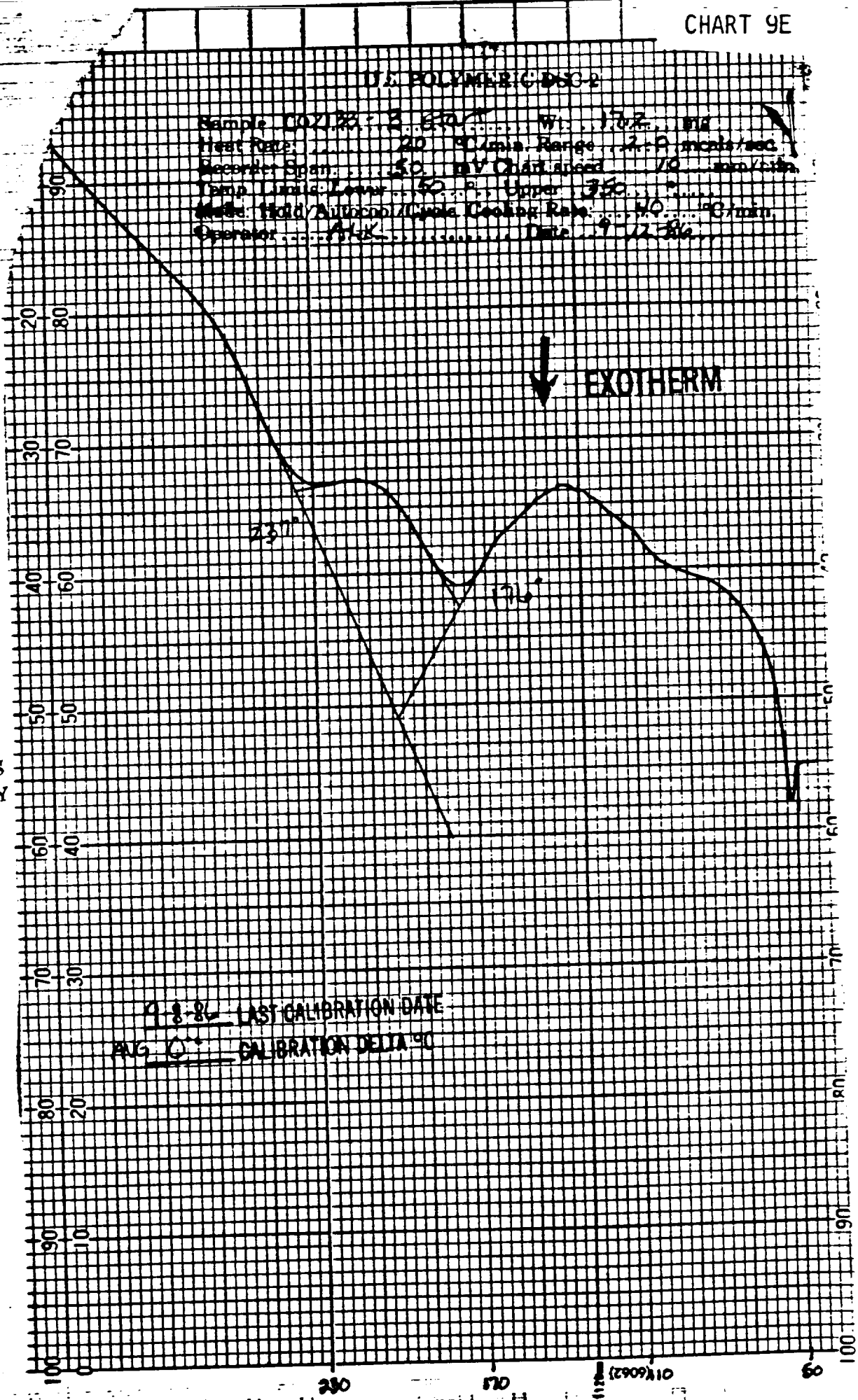


CHART 9E



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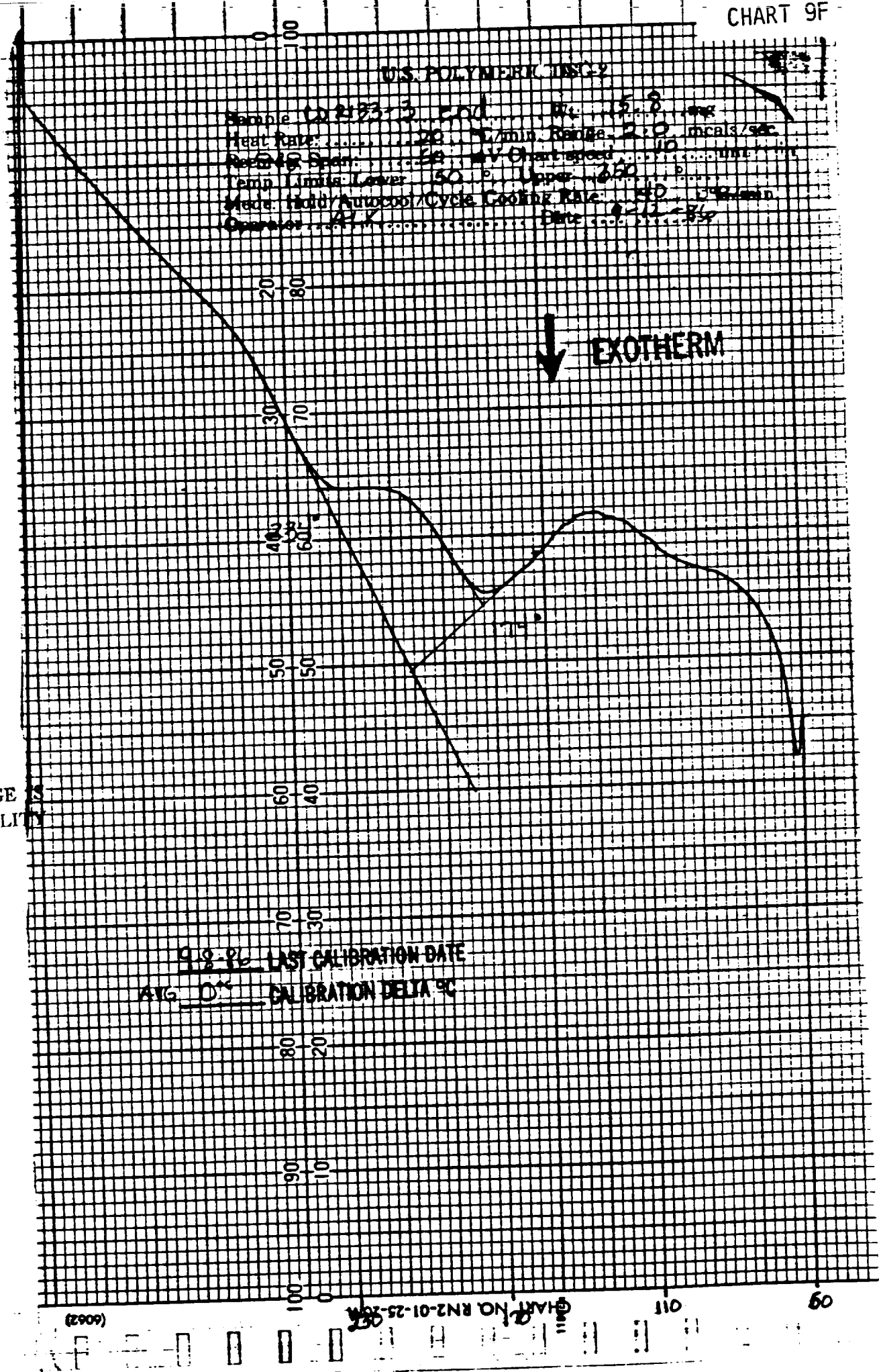

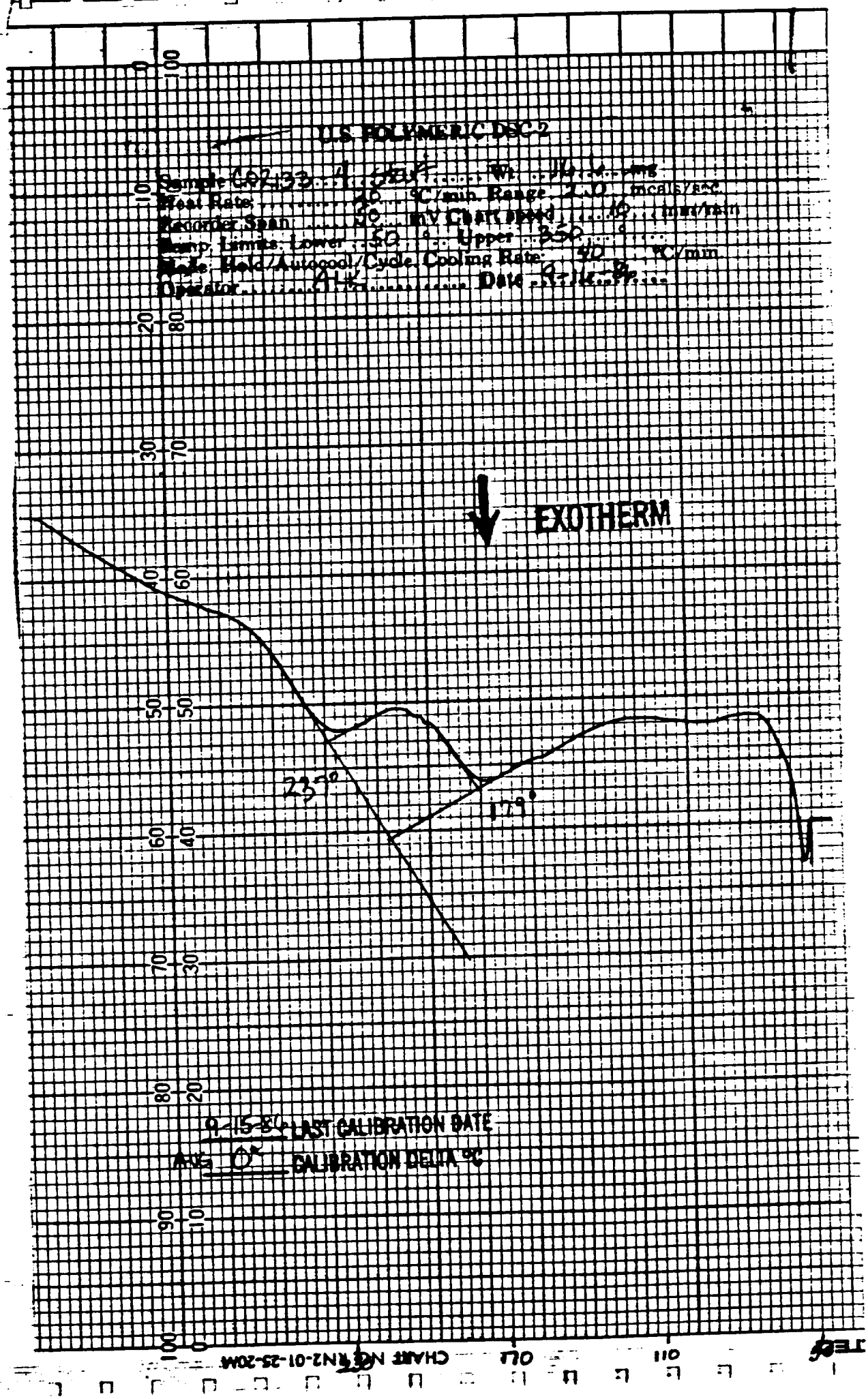

CHART 9H

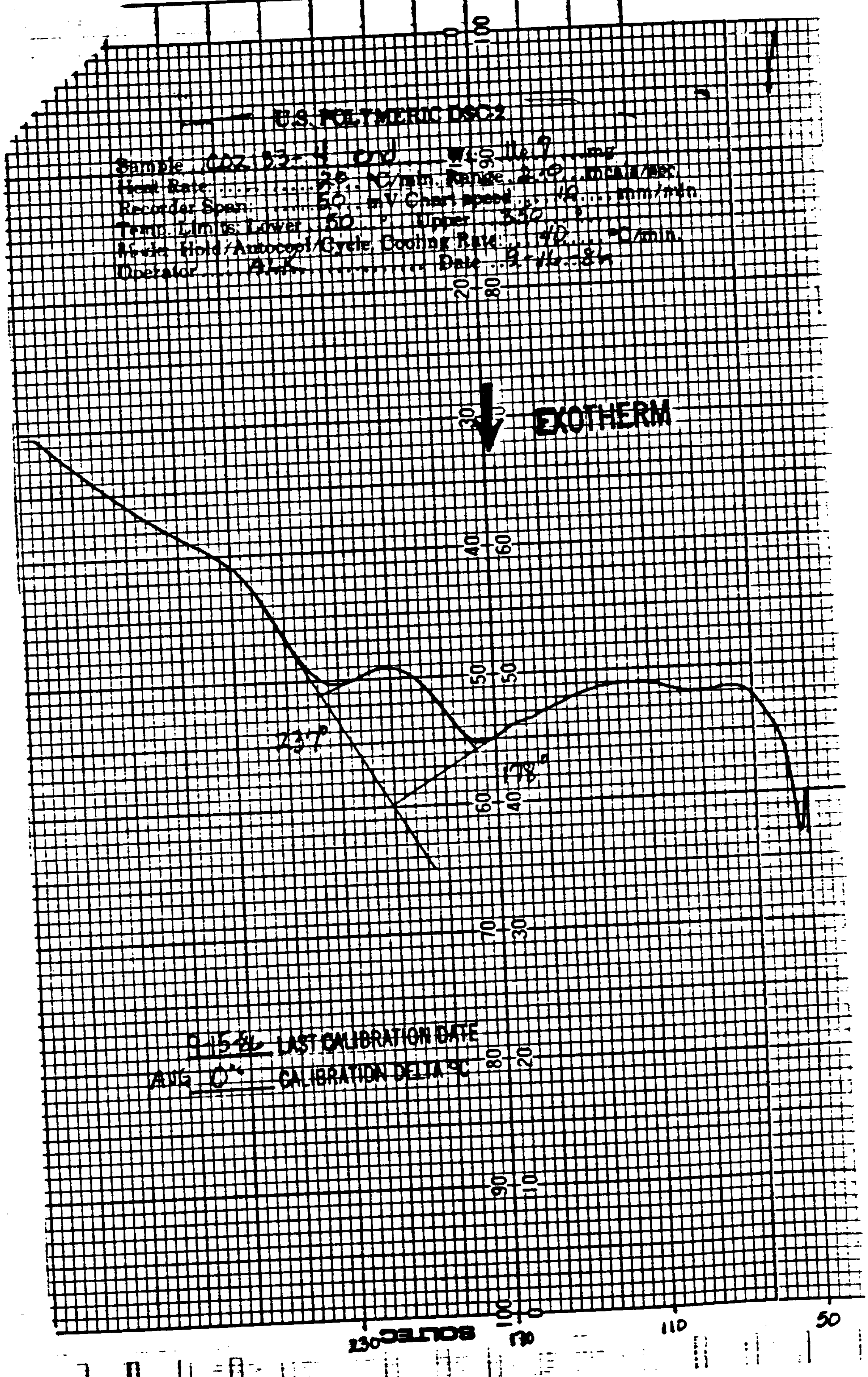

CHART 9I

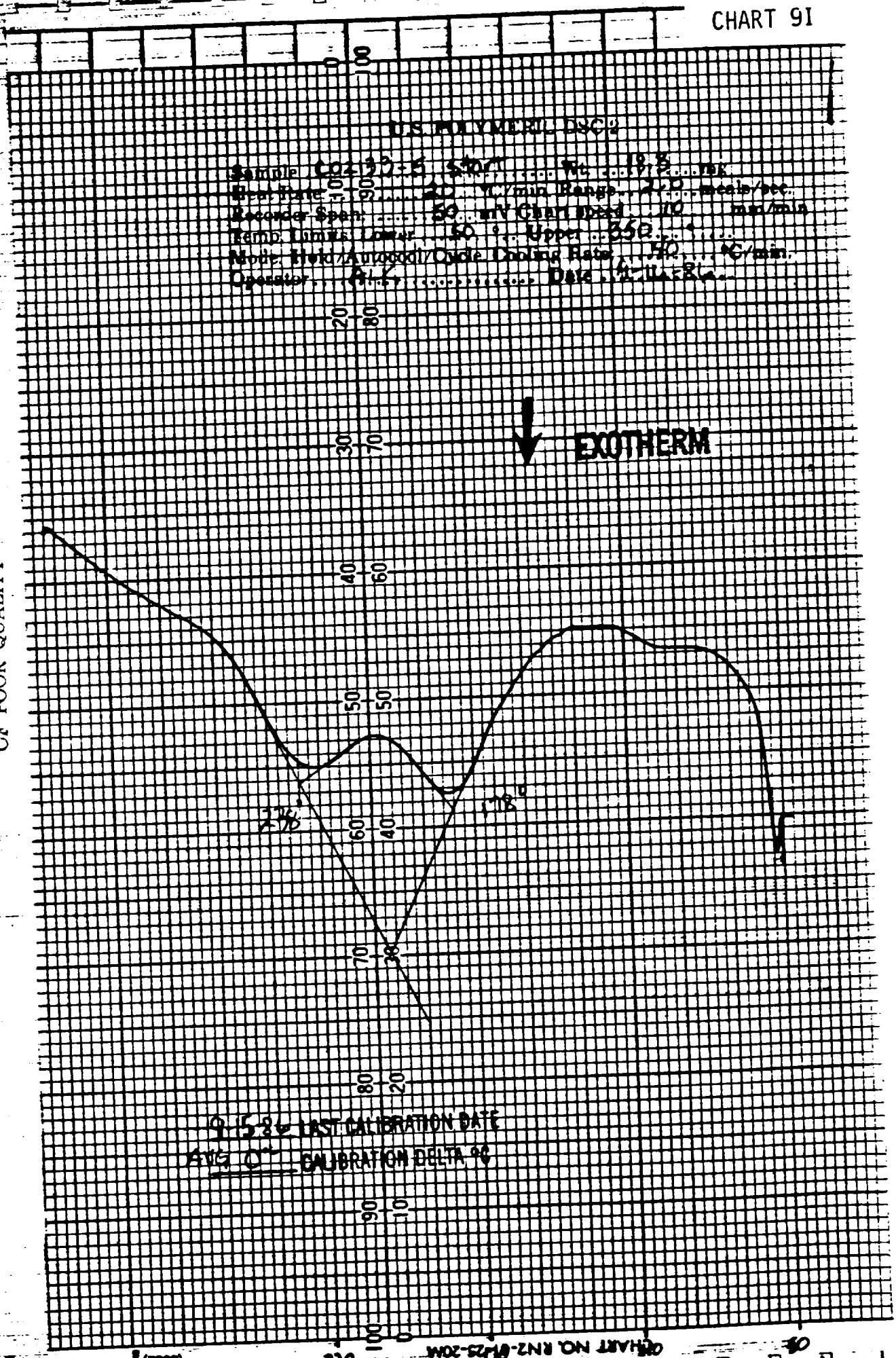

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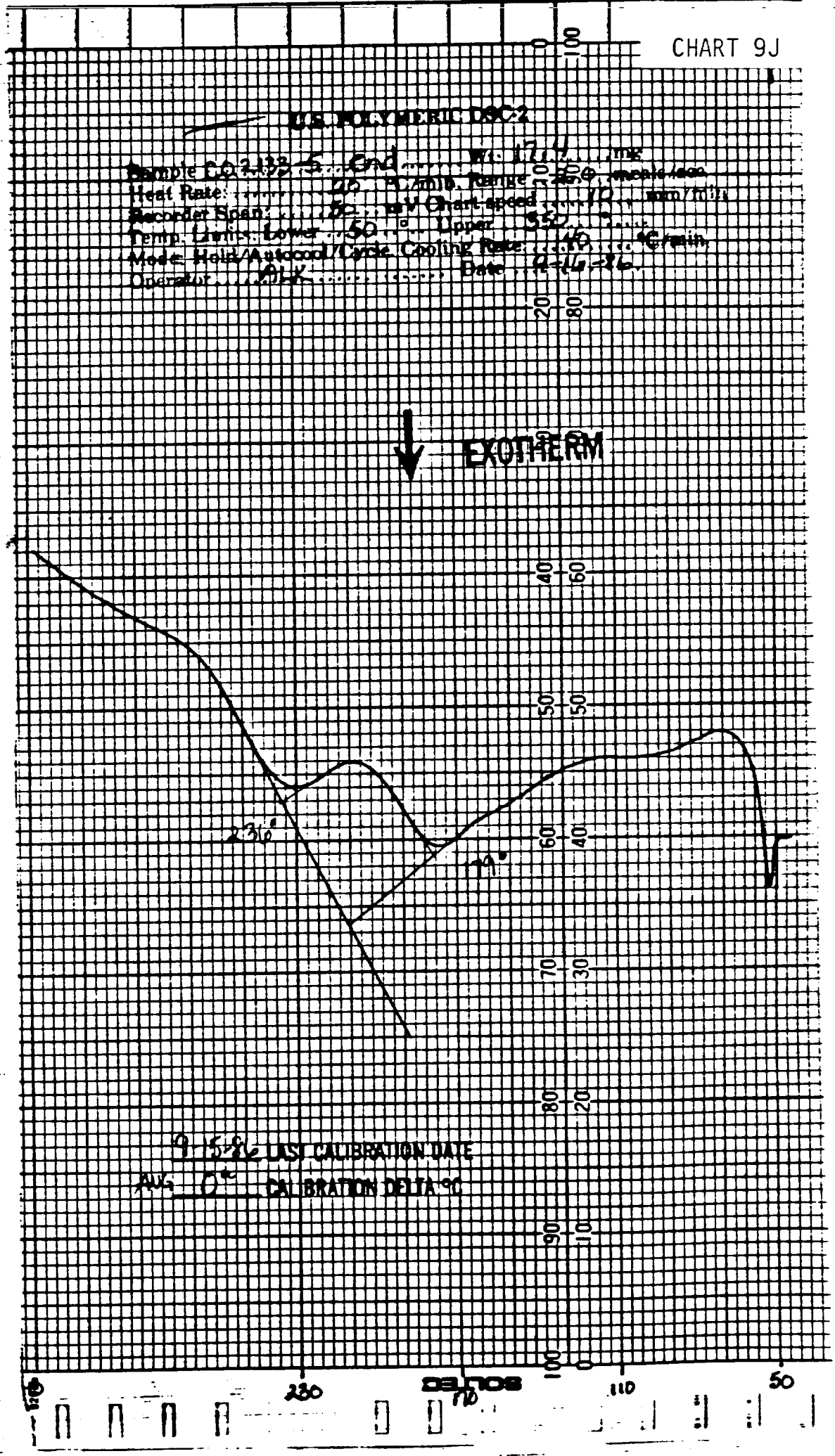
CHART 9J



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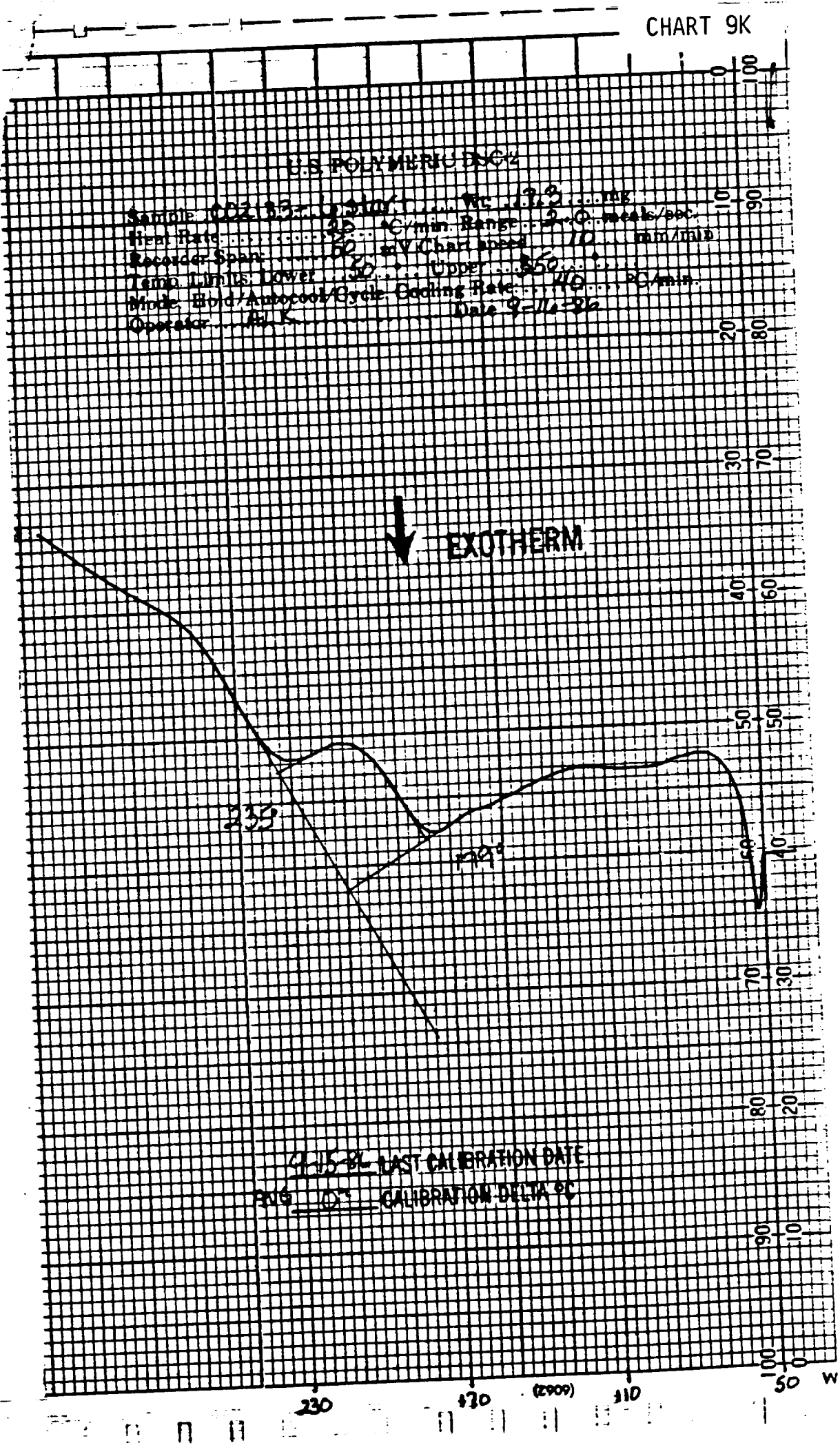


CHART 9L

U.S. POLYMERIC DSC-2

Sample 6021-33-16 cnd Wt. 17.4 mg
Heat Rate ... 20 °C/min Range ... 2.0 mcal/sec
Recorder Span: ... 50 mV Chart speed ... 10 ... mm/min
Temp. Limits: Lower ... 50 ° Upper ... 350 °
Mode: Hold/Autocool/Cycle Cooling Rate ... 20 ... °C/min
Operator ... A.K. ... Date ... 9-11-84

EXOTHERM

234°

178°

9-16-84 LAST CALIBRATION DATE

AVG 0° CALIBRATION DELTA °C

CHART NO. RN2-01-25-20M

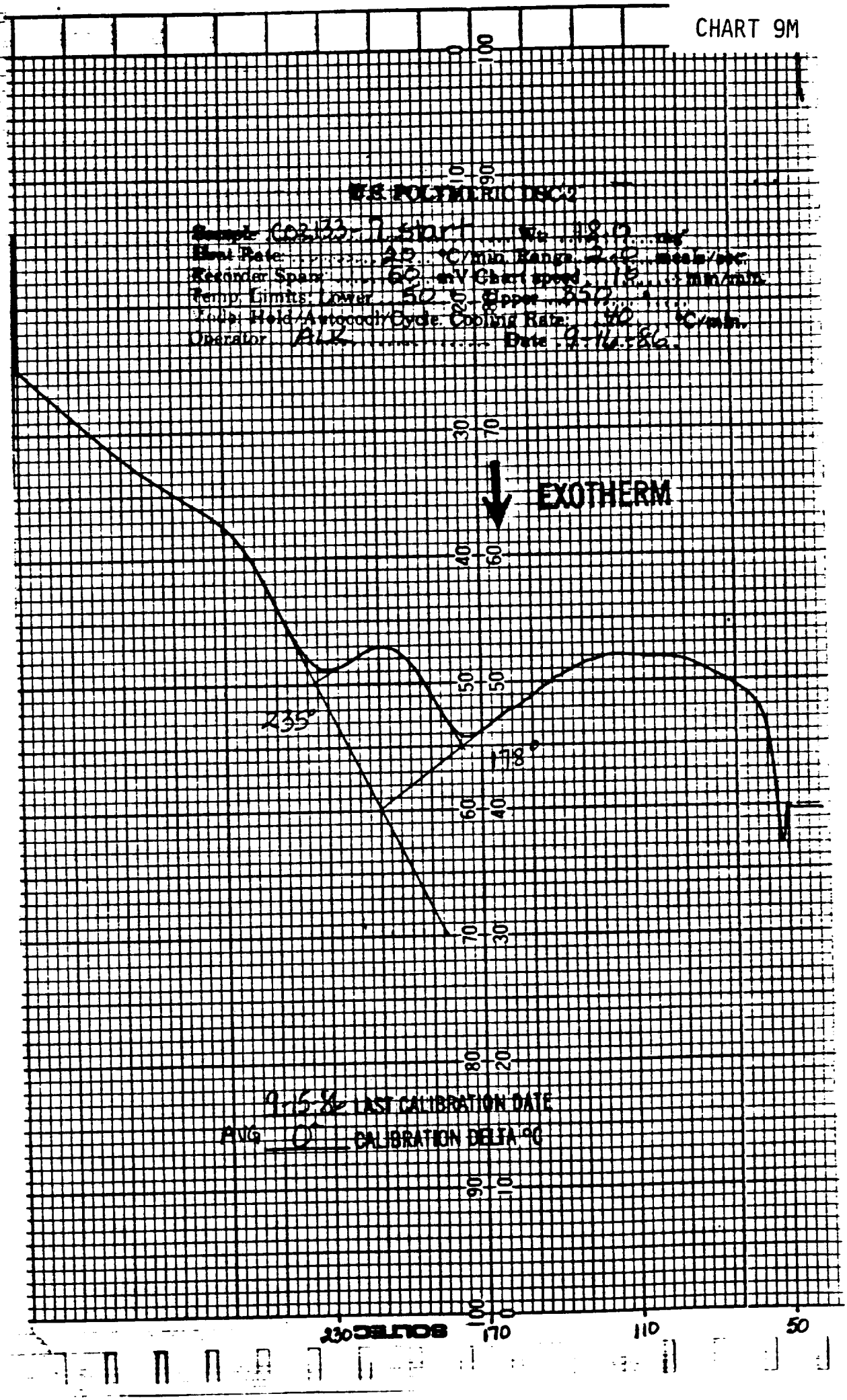
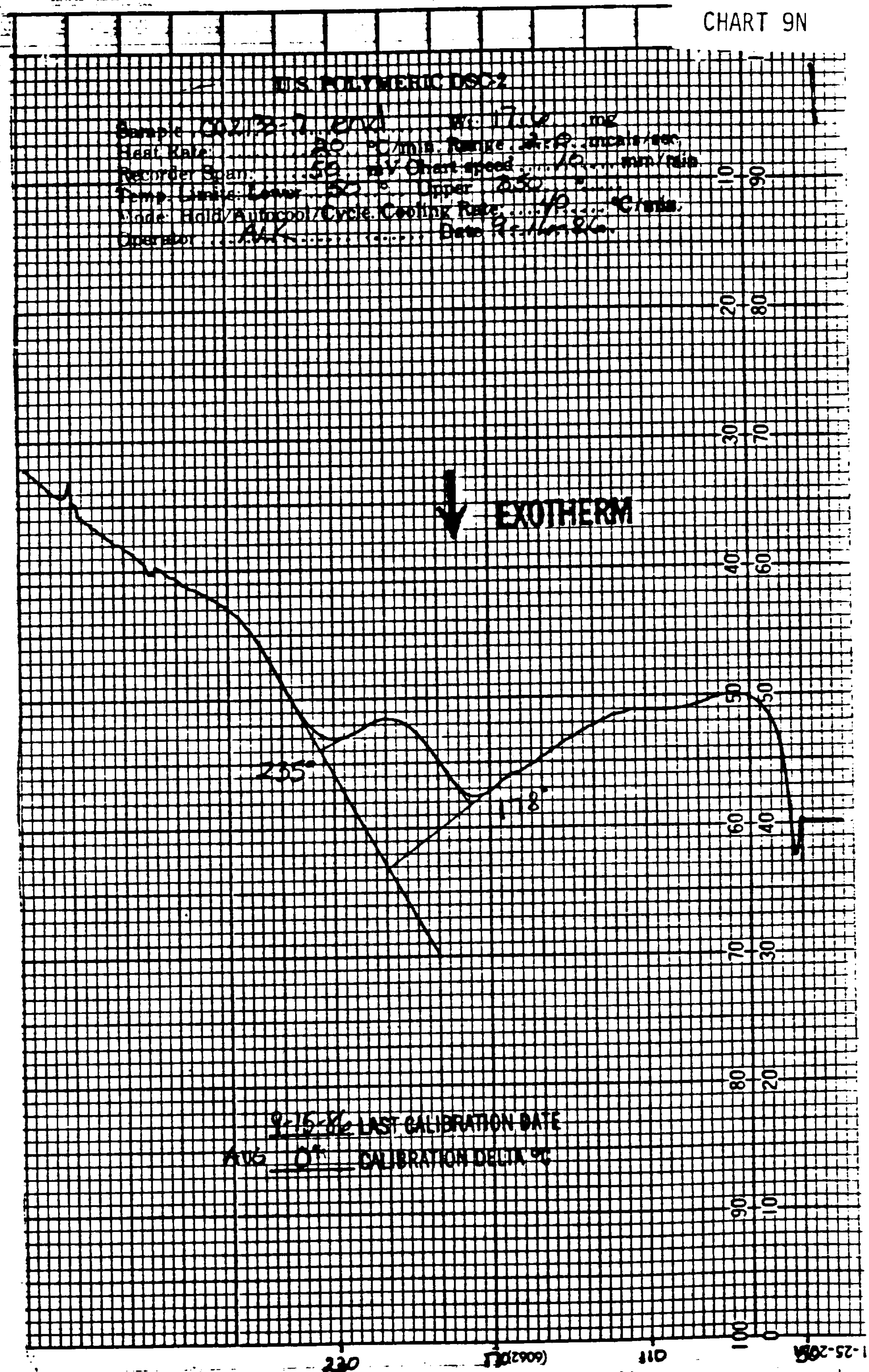


CHART 9N



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SPECTRUM NO. 15211
DATE 7-08-86
SAMPLE FM 5055 B
CO2133 # 5T-1

SOURCE
STRUCTURE

PATH 0.2 mm NACL
SOLVENT ACETONE
CONCENTRATION 30-50%
PHASE S
COMMENTS PRE-PREG
MATERIAL

ANALYST Y. MIRANDA

Beckman®
INFRARED
SPECTROPHOTOMETER

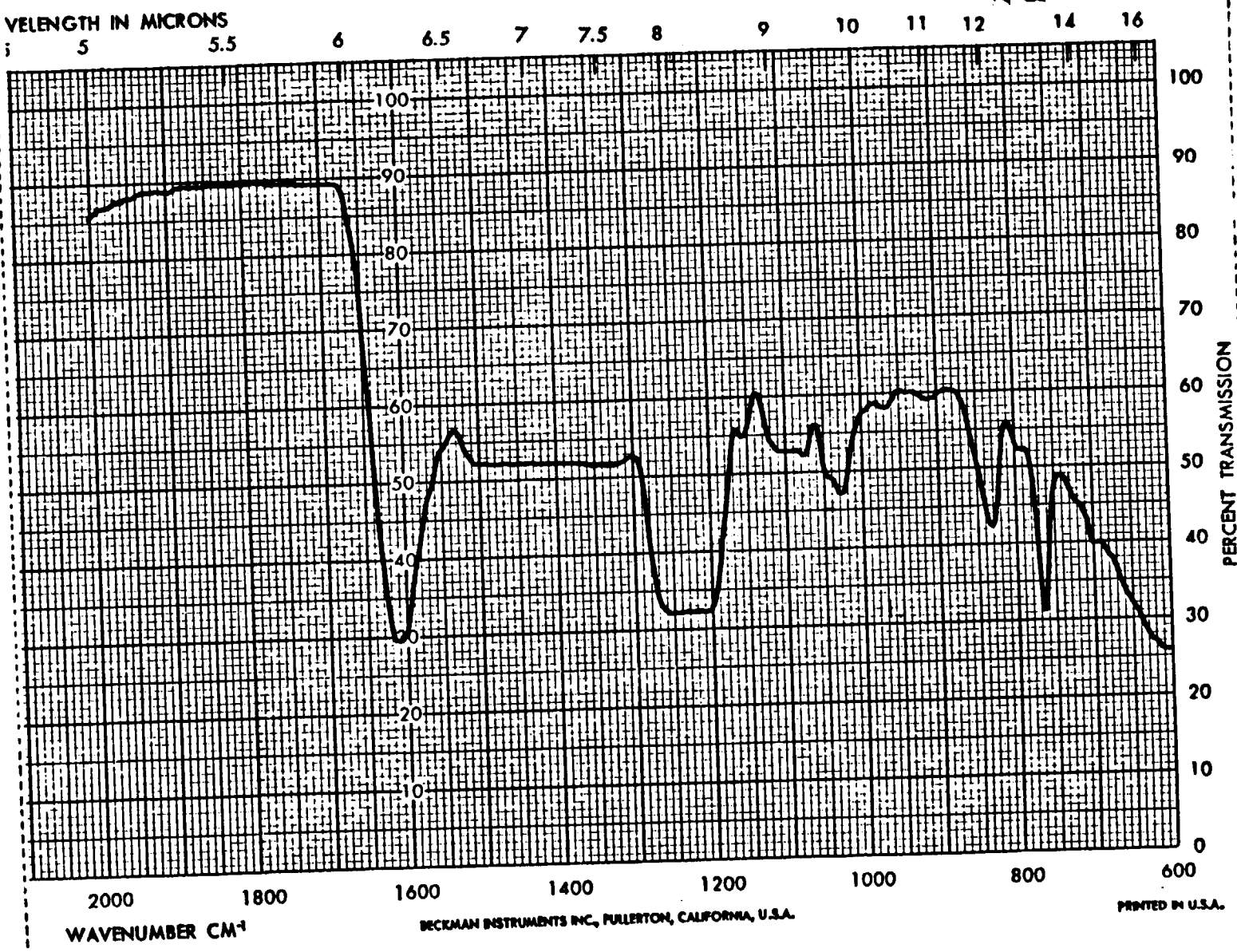


CHART 10A

SPECTRUM NO. 15212
DATE 7-08-86
SAMPLE FM 5055 B
CO2133 # E-1

SOURCE

STRUCTURE

PATH 0.2 mm NACL
SOLVENT ACETONE
CONCENTRATION 30-50%
PHASE 3
COMMENTS PRE-PREG
MATERIAL

ANALYST V. MIRANDA

Beckman®

INFRARED
SPECTROPHOTOMETER

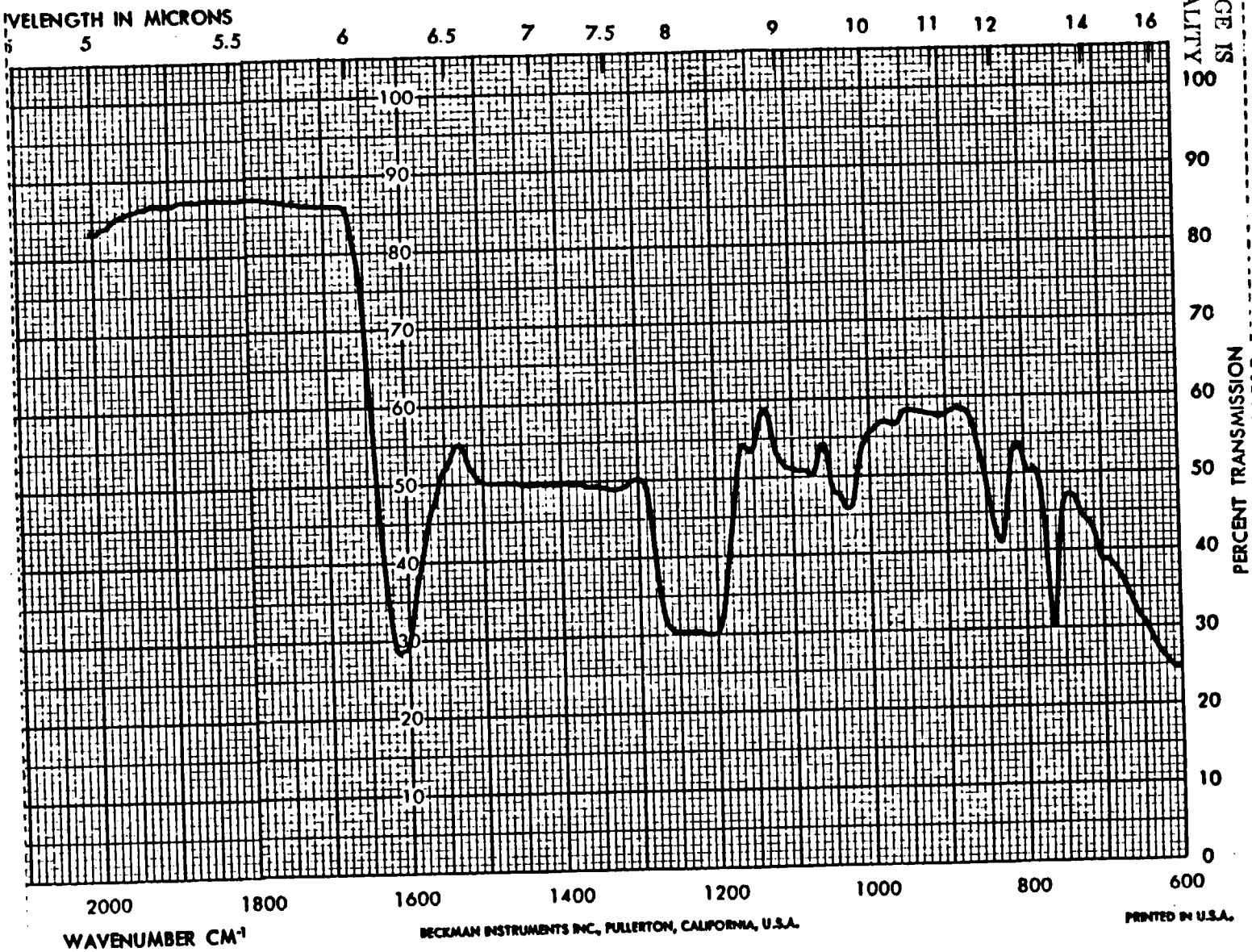


CHART 10B

SPECTRUM NO. 15213
DATE 7-08-86
SAMPLE FM 5056 B
CO2133 # ST-2
SOURCE
STRUCTURE

PATH 0.2 mm NACL
SOLVENT ACETONE
CONCENTRATION 30-50%
PHASE 3
COMMENTS PRE-PREG
MATERIAL
ANALYST V. MIRANDA

Beckman®
INFRARED
SPECTROPHOTOMETER

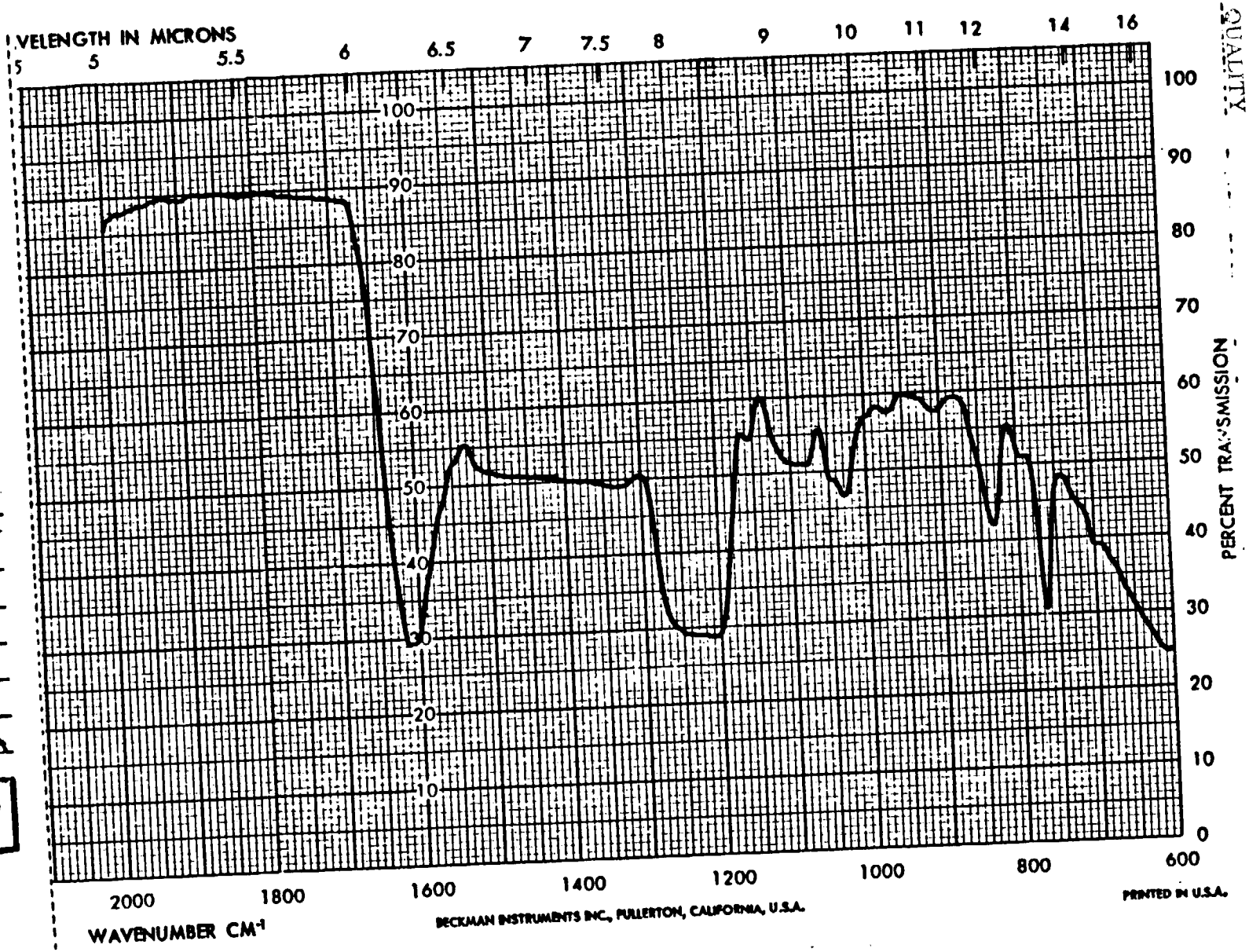


CHART 10C

SPECTRUM NO. 15214
DATE 7-08-86
SAMPLE FM 5055 B
C02133 # E-2

SOURCE
STRUCTURE

PATH 0.2 mm NACL
SOLVENT ACETONE
CONCENTRATION 30-50%T
PHASE 3
COMMENTS PRE-PREG
MATERIAL

ANALYST V. MIRANDA

Beckman®
INFRARED
SPECTROPHOTOMETER

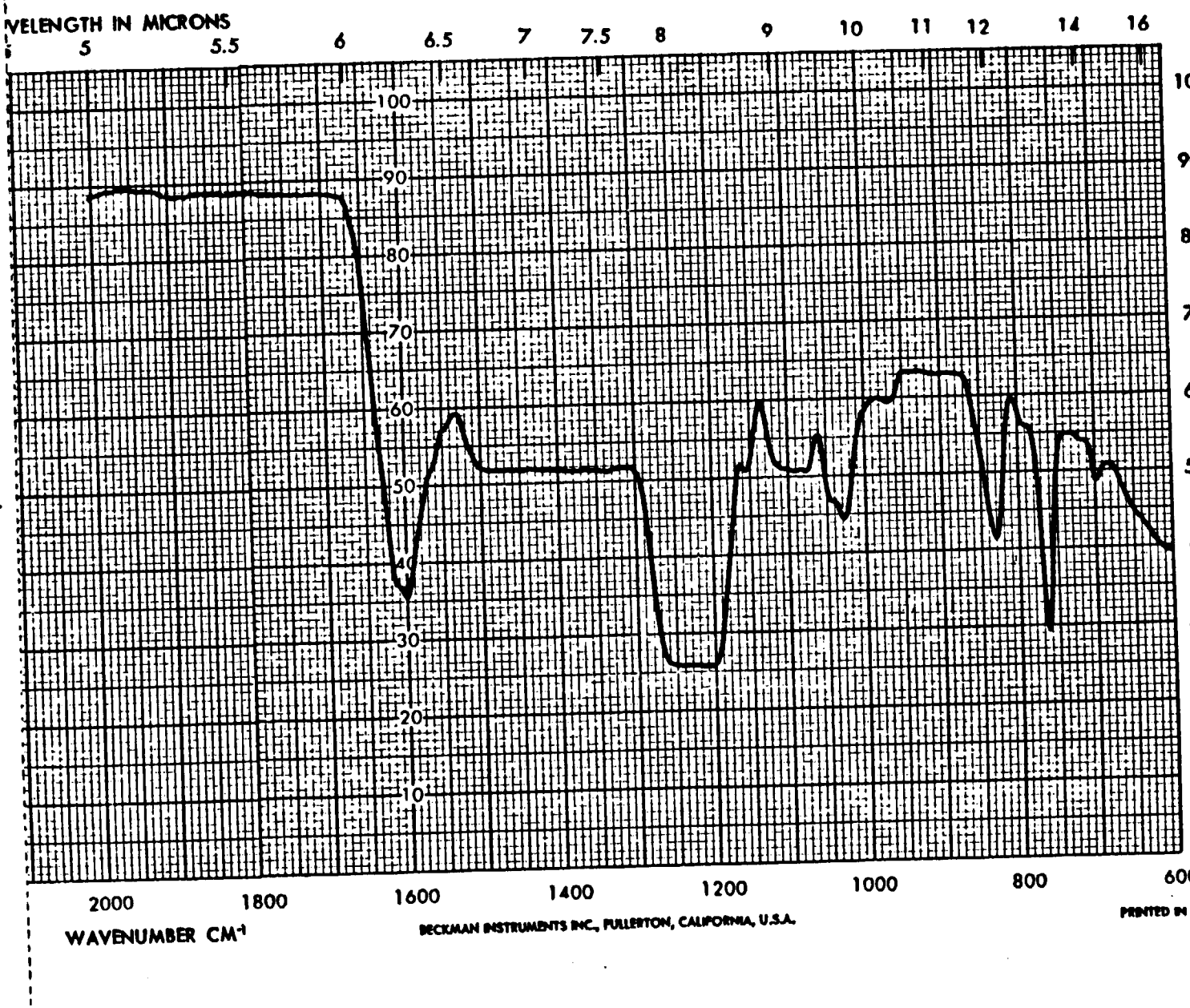


CHART 10D

SPECTRUM NO. 15215
DATE 7-08-86
SAMPLE FM 5055 B
CO2133 # ST-3

SOURCE

STRUCTURE

PATH 0.2 mm NACL
SOLVENT ACETONE
CONCENTRATION 30-50% T
PHASE 3
COMMENTS PRE-PREG
MATERIAL

ANALYST V. MIRANDA

Beckman®
INFRARED
SPECTROPHOTOMETER

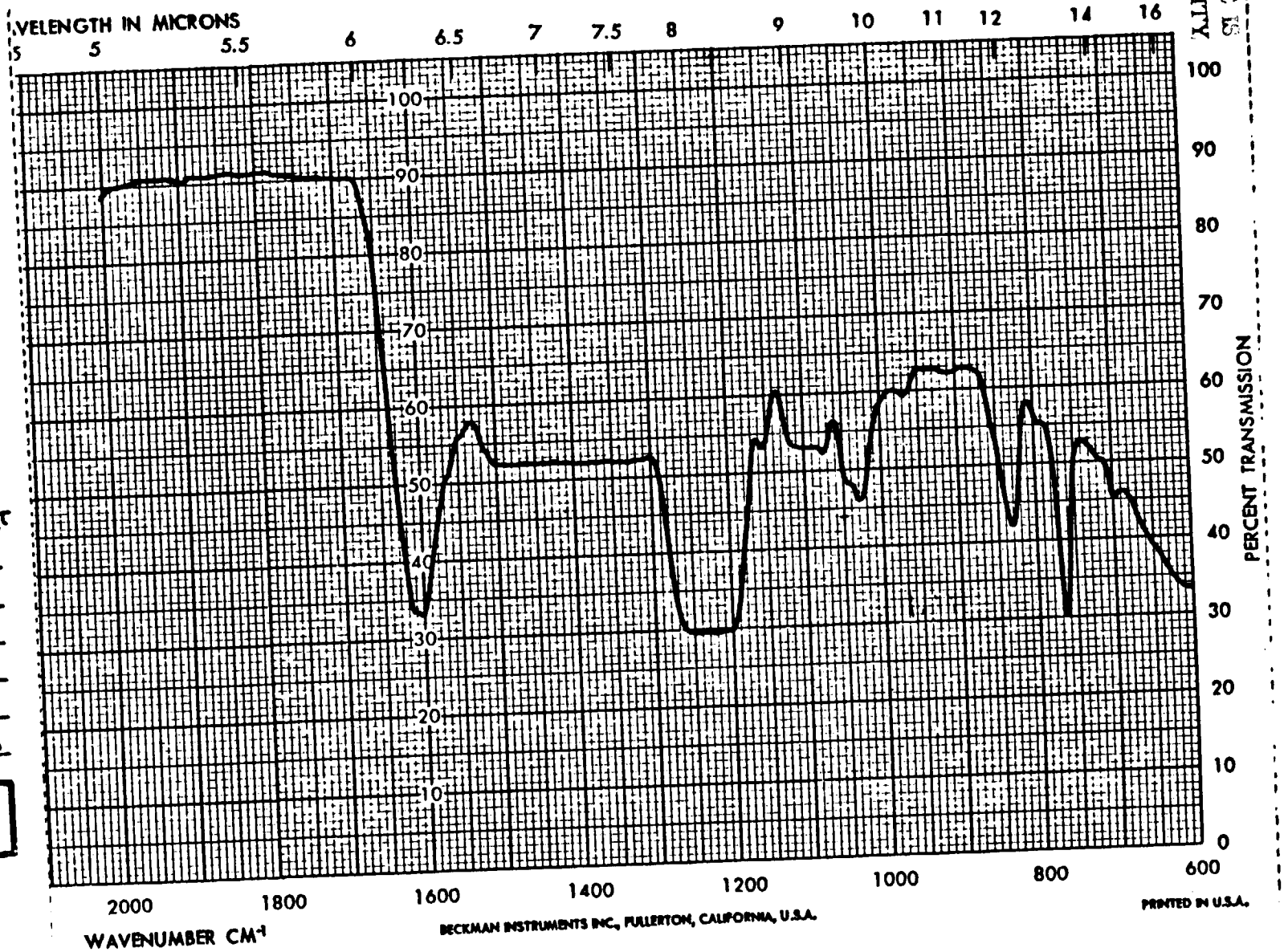


CHART 10E

SPECTRUM NO. 15216
DATE 7-08-86
SAMPLE FM 5055 B
CO2133 # E-3

SOURCE

STRUCTURE

PATH 0.2 mm NACL
SOLVENT ACETONE
CONCENTRATION 30-50%T
PHASE 3
COMMENTS PRE-PREG
MATERIAL

ANALYST V. MIRANDA

Beckman®

INFRARED
SPECTROPHOTOMETER

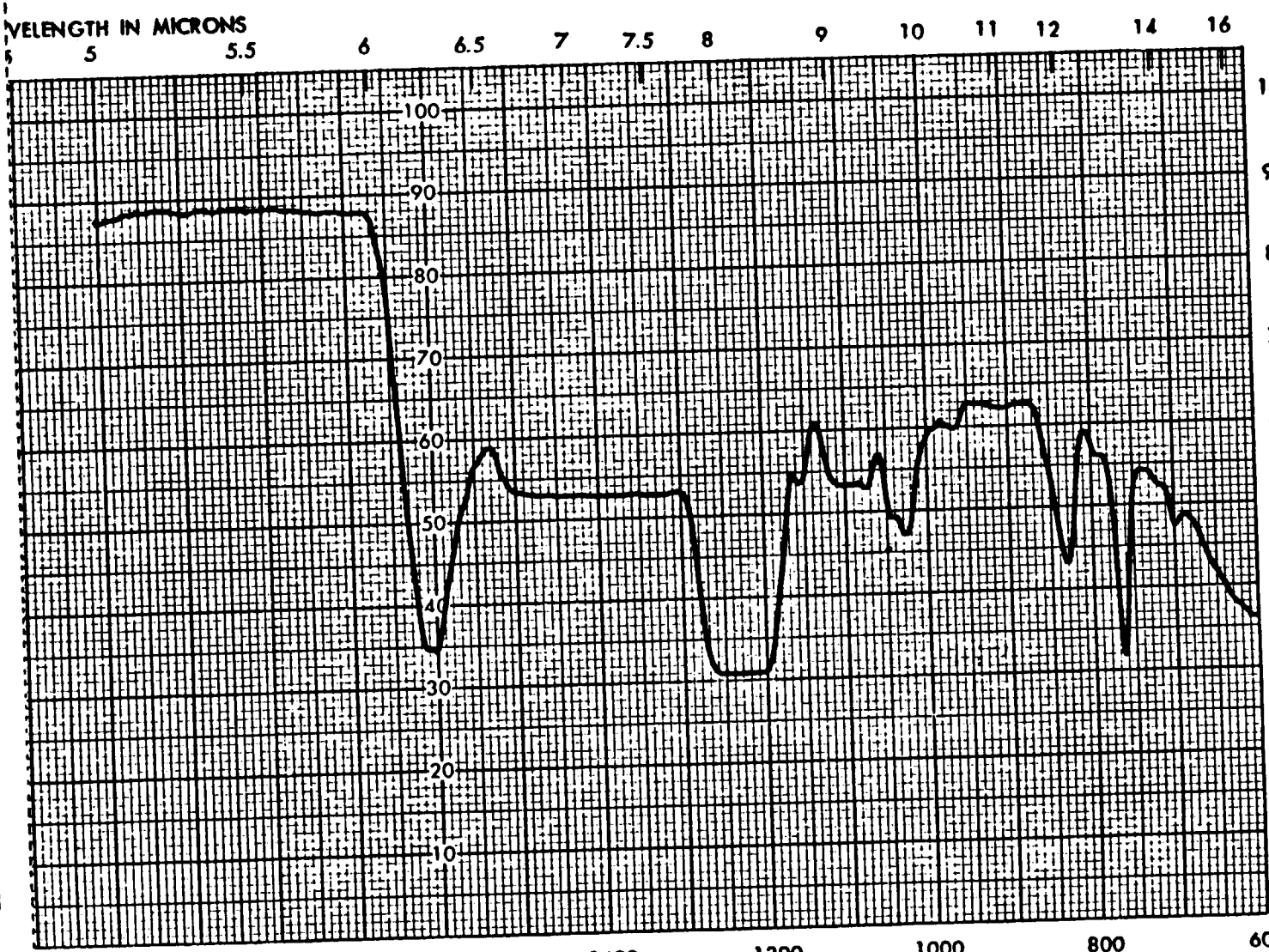


CHART 10F

SPECTRUM NO. 1521B

DATE 7-08-86

SAMPLE FM 5055 B
CO2133 # ST-4

SOURCE

STRUCTURE

PATH 0.2 mm NACL

SOLVENT ACETONE

CONCENTRATION 30-50 %T

PHASE 3

COMMENTS PRE-PREG
MATERIAL

ANALYST Y. MIRANDA

Beckman®

INFRARED
SPECTROPHOTOMETER

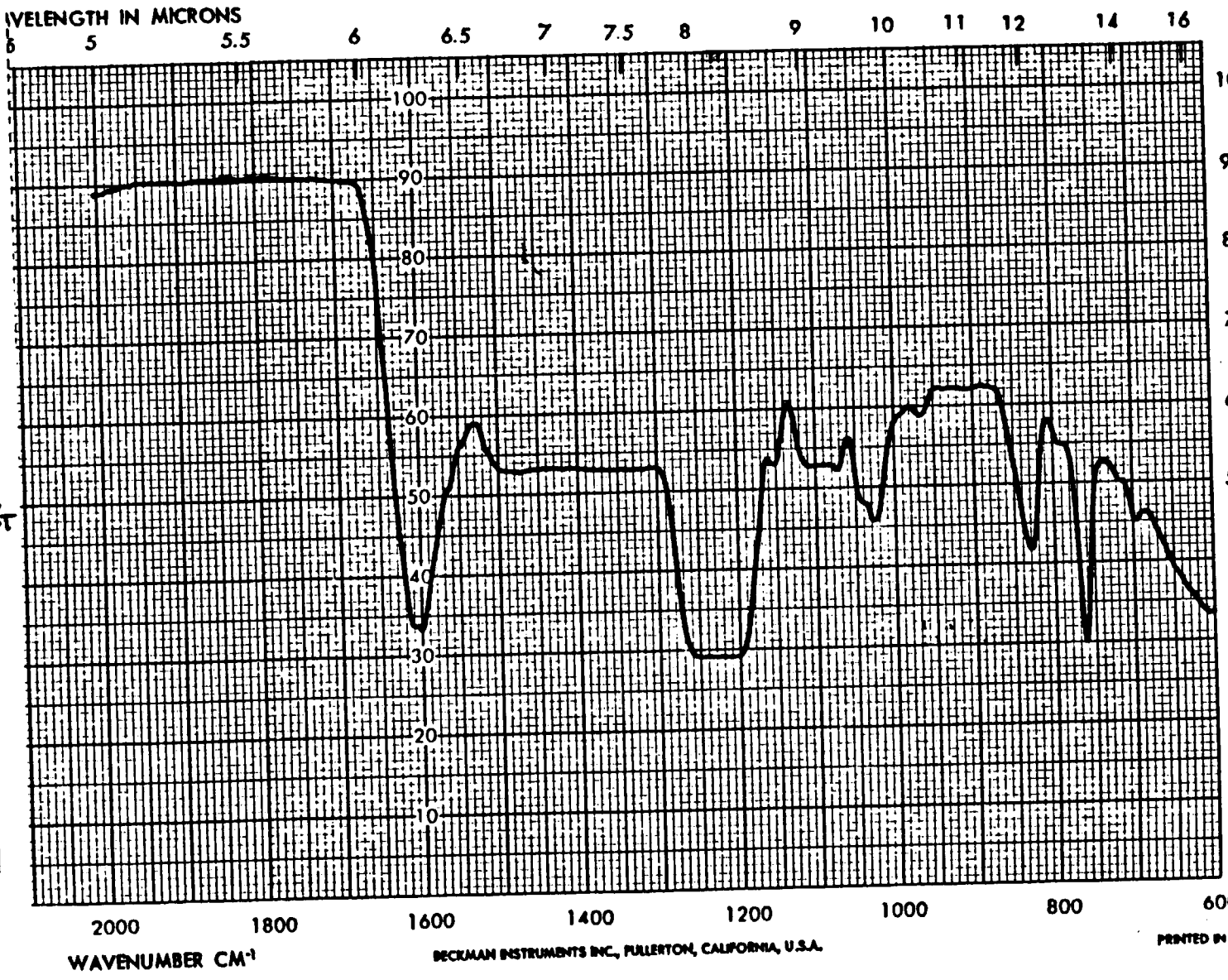


CHART 10G

SPECTRUM NO. 15218
DATE 7-08-86
SAMPLE FM 5055 B
C02133 # E-4

SOURCE

STRUCTURE

PATH 0.2 mm NACL
SOLVENT ACETONE
CONCENTRATION 30-50%
PHASE S
COMMENTS PRE-PREG
MATERIAL

ANALYST V. MIRANDA

Beckman®

INFRARED
SPECTROPHOTOMETER

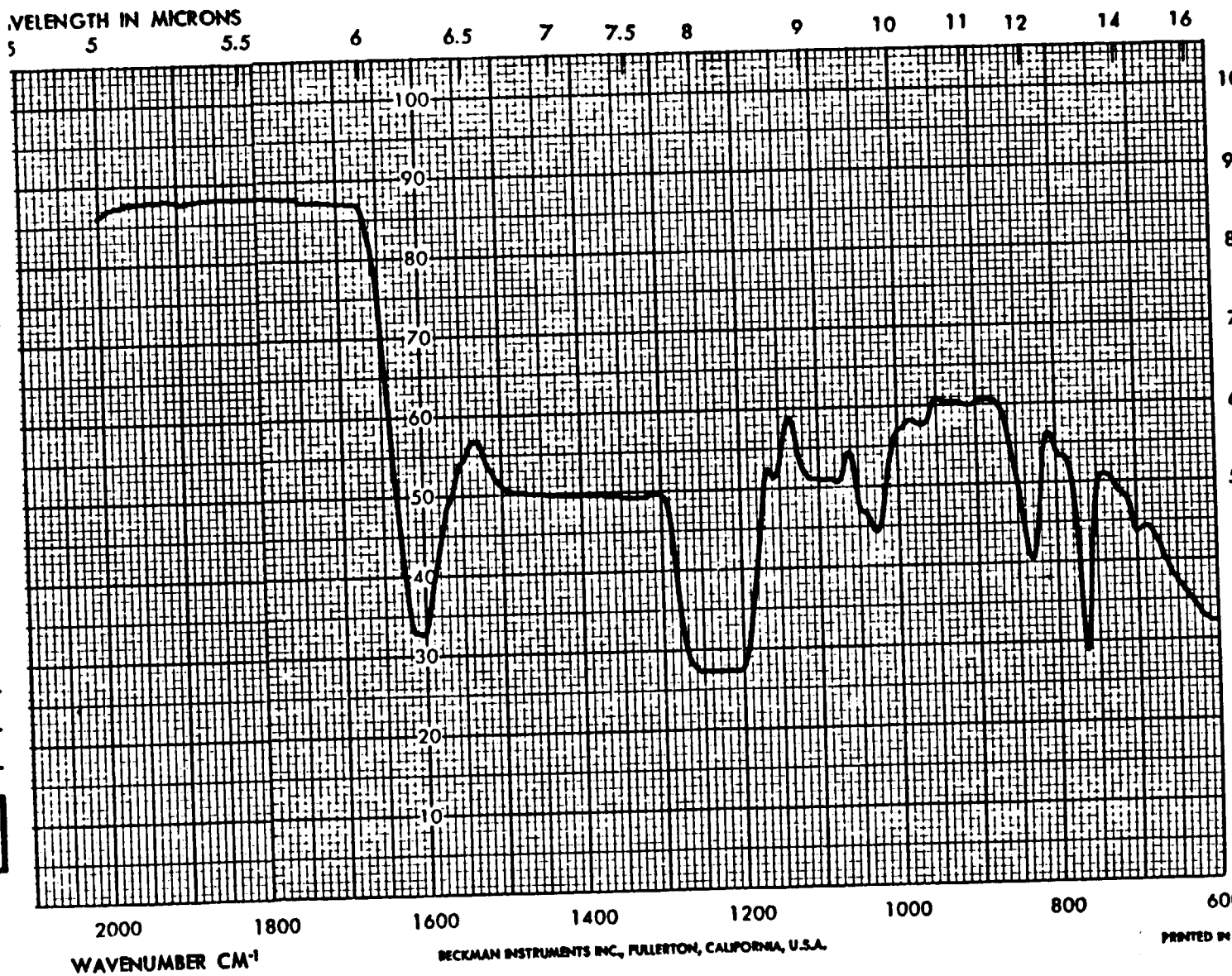


CHART 10H

SPECTRUM NO. 15219
DATE 7-08-86
SAMPLE FM 5055 B
CO2133 # 5T-5

SOURCE

STRUCTURE

PATH 0.2 mm NACL
SOLVENT ACETONE
CONCENTRATION 30-50%
PHASE 3
COMMENTS PRE-PREG
MATERIAL

ANALYST V. MIRANDA

Beckman®
INFRARED
SPECTROPHOTOMETER

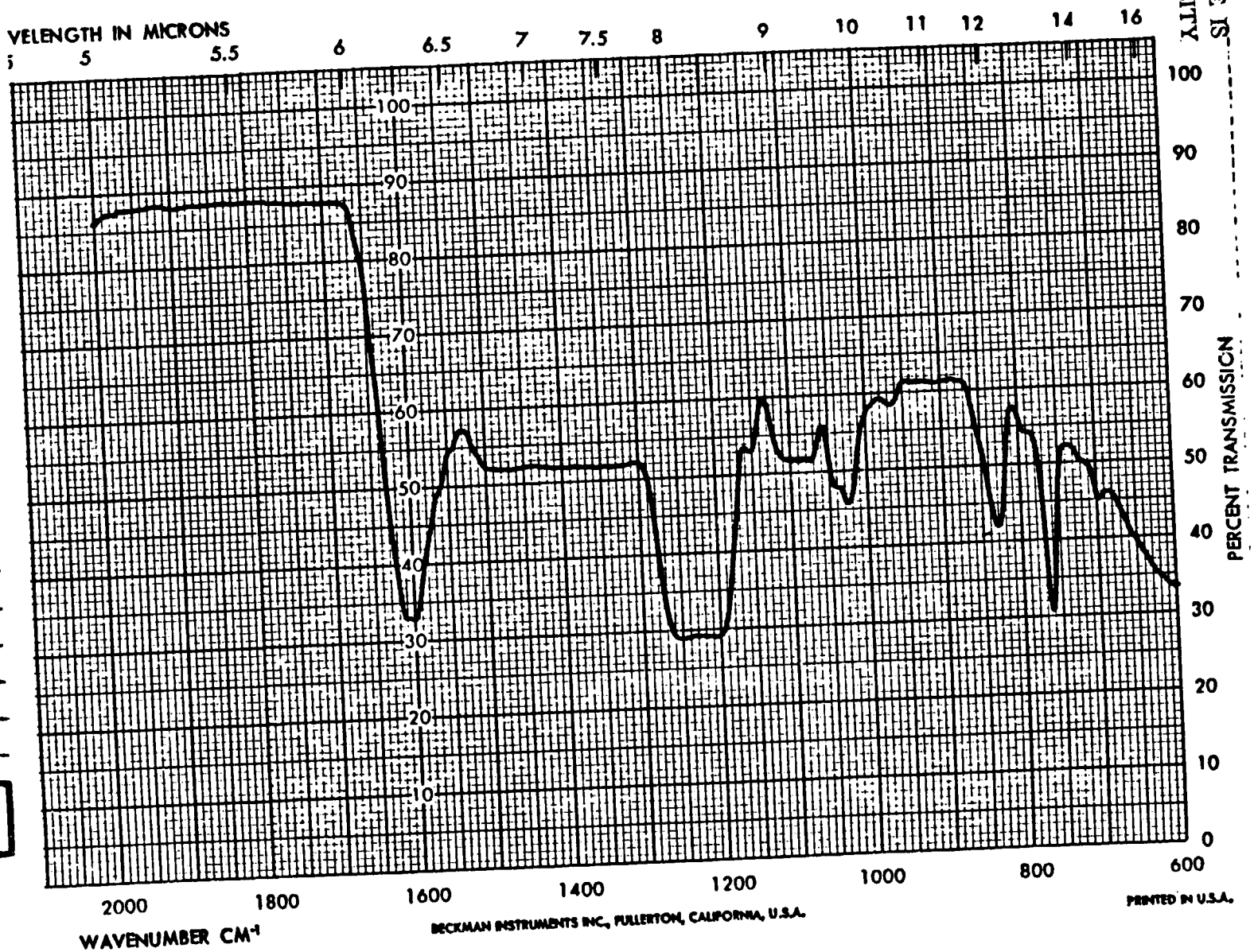


CHART 101

SPECTRUM NO. 15220

DATE 7-08-86

SAMPLE FM 5055 B
C02133 # E-5

SOURCE

STRUCTURE

PATH 0.2 mm NACL

SOLVENT ACETONE

CONCENTRATION 30-50%T

PHASE S.

COMMENTS PRE-PREG
MATERIAL

ANALYST V. MIRANDA

Beckman®

INFRARED
SPECTROPHOTOMETER

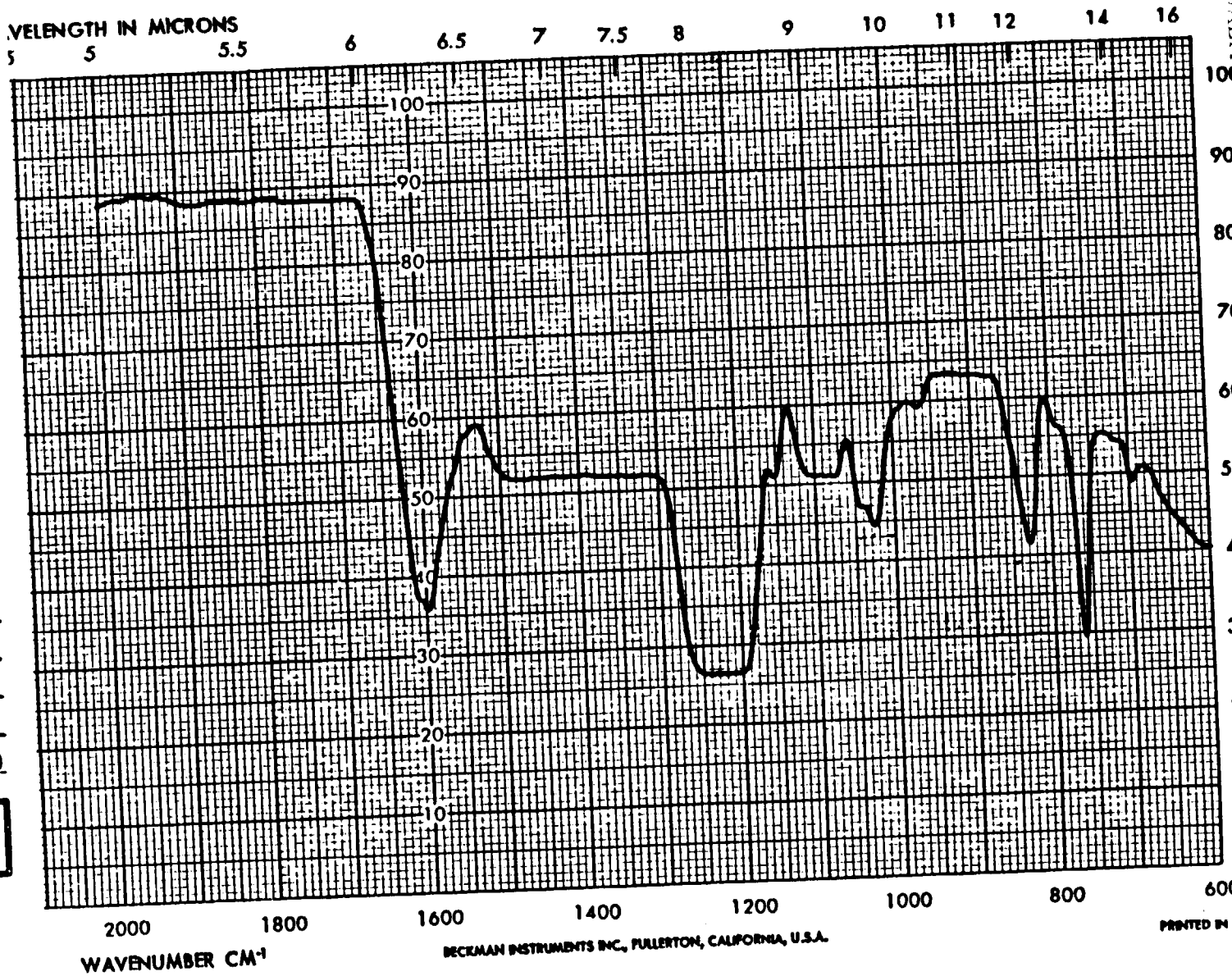


CHART 10J

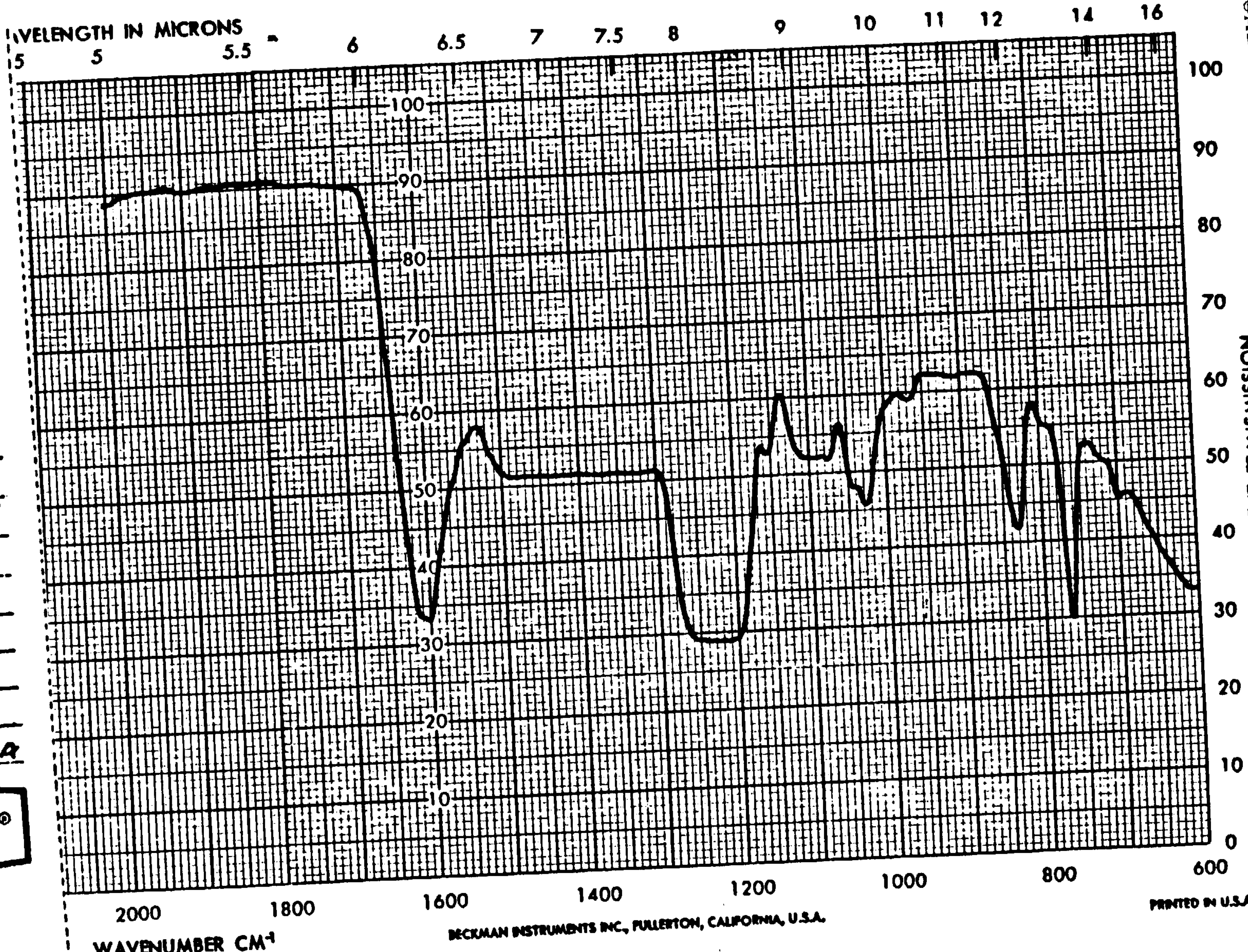
SPECTRUM NO. 15221
DATE 7-08-86
SAMPLE FM 5055 B
CO2133 # 6T-6

SOURCE
STRUCTURE

PATH 0.2 mm NACL
SOLVENT ACETONE
CONCENTRATION 30-50%
PHASE 3
COMMENTS PRE-PREG
MATERIAL

ANALYST Y. MIRANDA

Beckman®
INFRARED
SPECTROPHOTOMETER



SPECTRUM NO. 15222
DATE 7-08-86
SAMPLE FM 5055B
CO2133 # E-6

SOURCE
STRUCTURE

PATH 0.2 mm NACL
SOLVENT ACETONE
CONCENTRATION 30-50%
PHASE S
COMMENTS PRE-PREG
MATERIAL

ANALYST V. MIRANDA

Beckman®
INFRARED
SPECTROPHOTOMETER

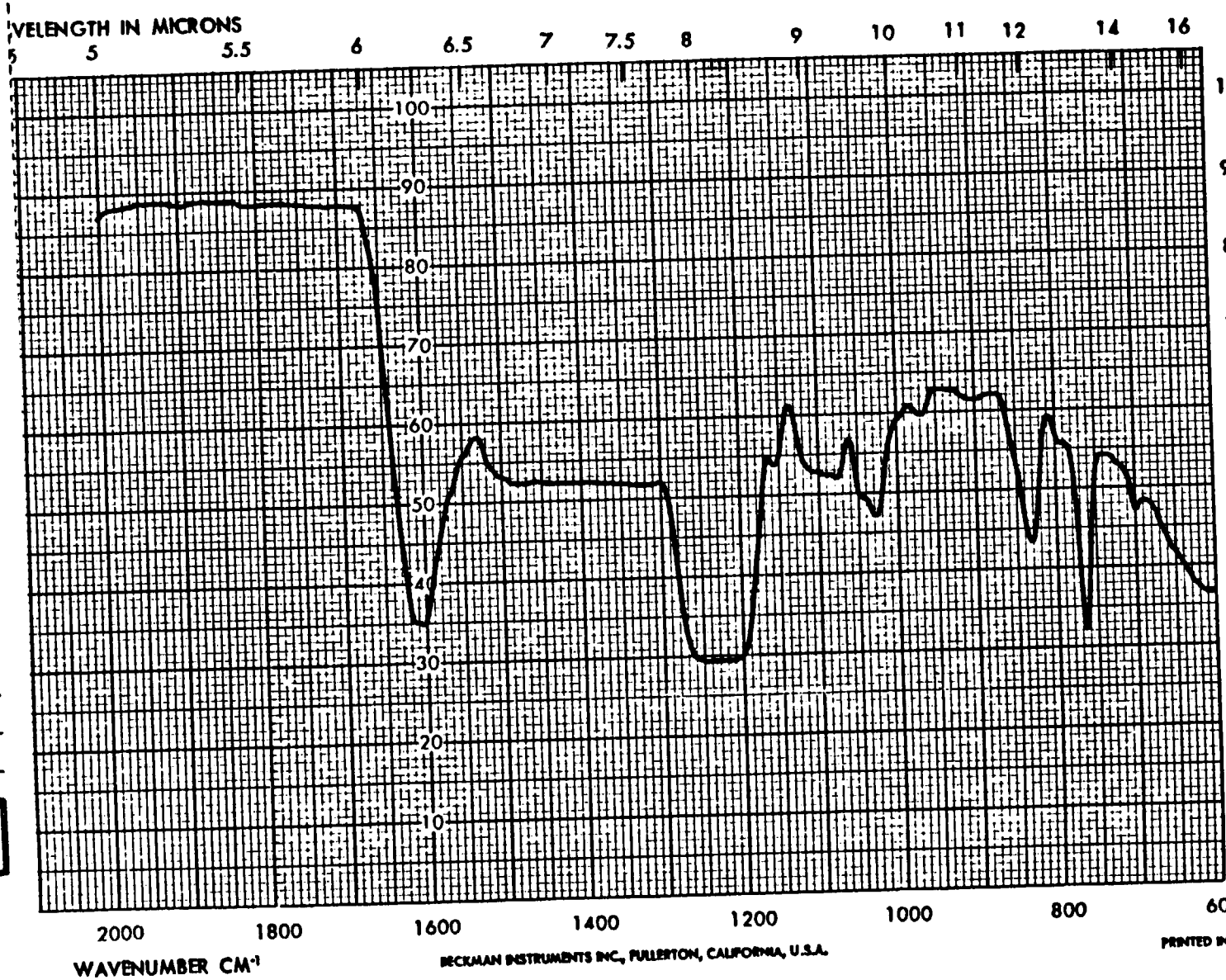


CHART 10L

SPECTRUM NO. 15223
DATE 7-08-86
SAMPLE FM 5055B
CO2133 # ST-7

SOURCE
STRUCTURE

PATH 0.2 mm NACL
SOLVENT ACETONE
CONCENTRATION 30-50%T
PHASE 3
COMMENTS PRE-PREG
MATERIAL

ANALYST Y. MIRANDA

Beckman®
INFRARED
SPECTROPHOTOMETER

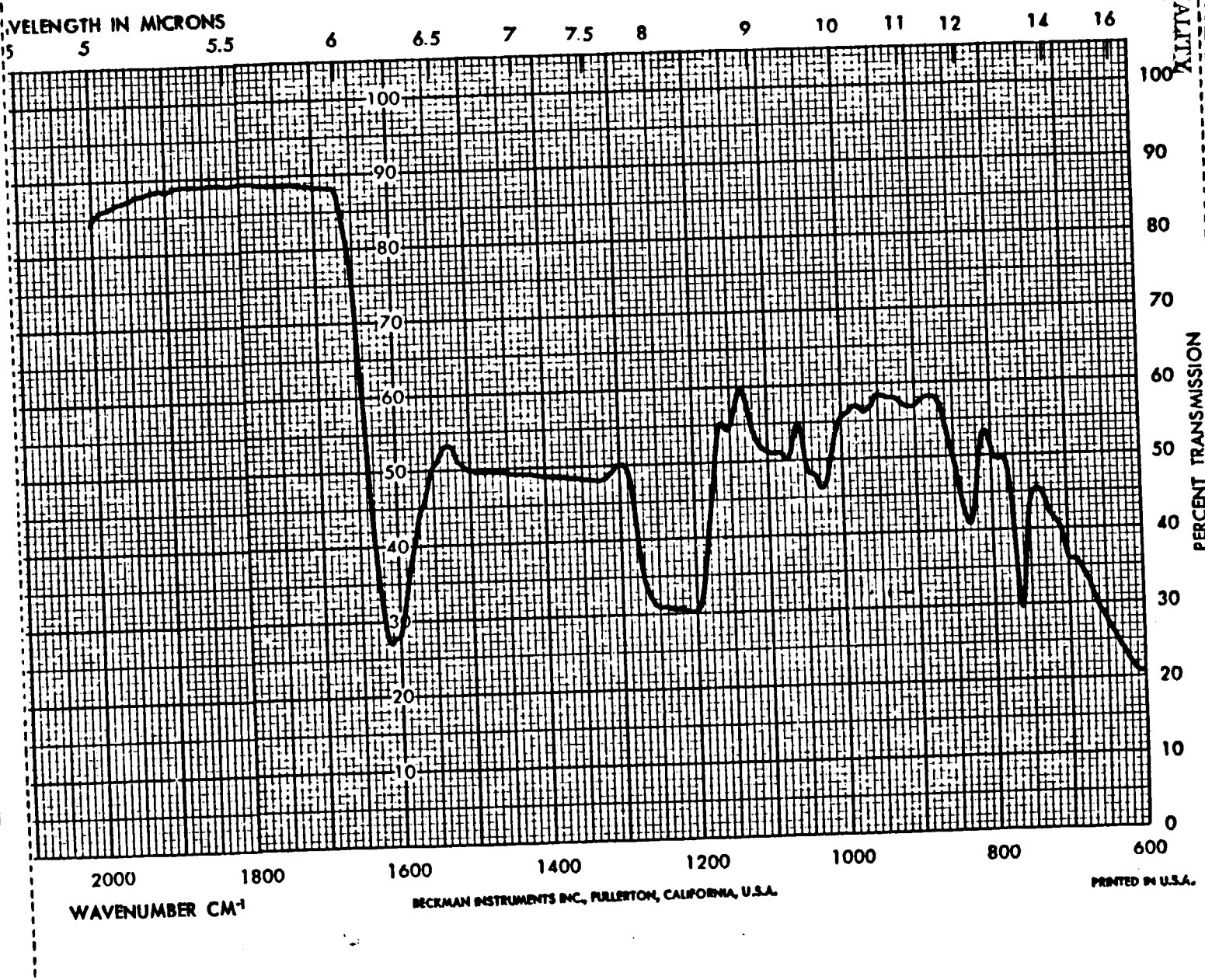


CHART 10M

SPECTRUM NO. 15224

DATE 7-08-86

SAMPLE FM 5055 B
C02133 # E-7

SOURCE

STRUCTURE

PATH 0.2 mm NACL

SOLVENT ACETONE

CONCENTRATION 30-50%

PHASE 3

COMMENTS PRE-PREG
MATERIAL

ANALYST Y. MIRANDA

Beckman®

INFRARED
SPECTROPHOTOMETER

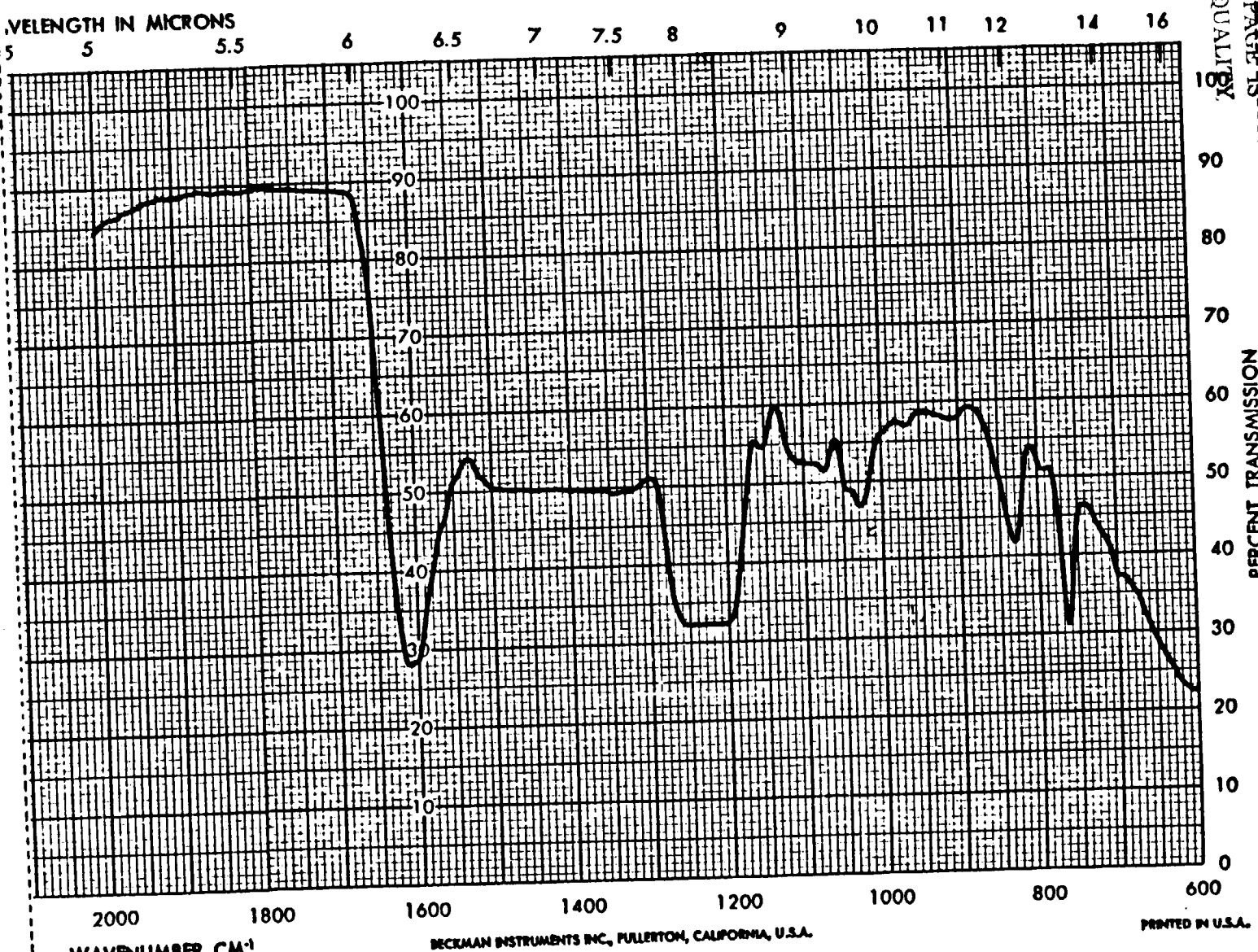


CHART 10N

Chart 21A1

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Chart 21A2

PART NO. 990088

RUN NO. ___ DATE 5/11/86
OPERATOR TJ
SAMPLE:
(02133-1-Smear (2)
ATM DM @ SR
FLOW RATE 2-SYSTEM

T-AXIS
SCALE, °C/in 20
PROG. RATE, °C/min 10
HEAT ✓ COOL 180
SHIFT, in 0

DTA-DSC
SCALE, °C/in
(mcal/sec)/in
WEIGHT, mg
REFERENCE

TGA
SCALE, mg/in
SUPPRESSION, mg
WEIGHT, mg
TIME CONST., sec
dY, (mg/min)/in

TMA
SCALE, mil/in 0.1/0.2
MODE Expansion
SAMPLE SIZE 0.261
LOAD, g 1
dY, (10X), (mils/min)/in

MEASURED VARIABLE

DUPONT instruments

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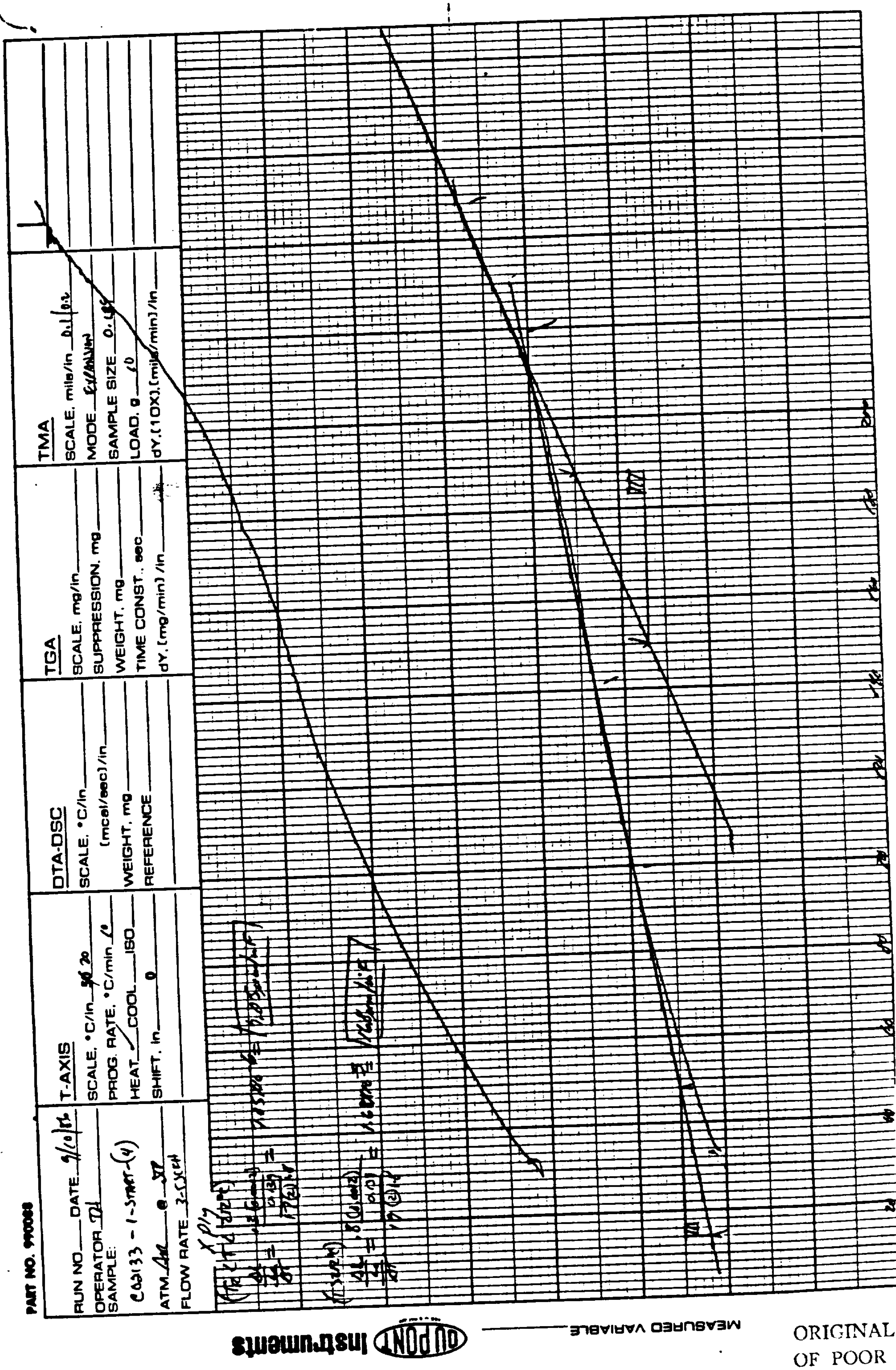

Chart 21B1

PART NO. 990008

RUN NO. ___ DATE 9/11/84
OPERATOR DK
SAMPLE:
Co 2133 - 1-640 -6

ATM DK @ RT
FLOW RATE 3-5SCFH
w/Ar

T-AXIS
SCALE, °C/in 50 20
PROG. RATE, °C/min 10
HEAT ✓ COOL ___ ISO ___
SHIFT, in ___ 0 ___

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY, (mg/min) /in ___

TMA
SCALE, mils/in 0.1/0.2
MODE Expansion
SAMPLE SIZE 0.244
LOAD, g 10
dY, (10X), (mils/min)/in ___

MEASURED VARIABLE

DUPONT instruments

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Chart 21B2

PART NO. 990088

RUN NO ___ DATE 3/11/96
OPERATOR TK
SAMPLE: Co2(3)-1-End-(2)
ATM Air @ 30
FLOW RATE 1.5 SCFH

T-AXIS
SCALE, °C/in 50 20
PROG. RATE, °C/min 10
HEAT / COOL ___ ISO
SHIFT, in 0

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY/dT (mg/min) ___

TMA
SCALE, mils/in 0.1/0.2
MODE Expansion
SAMPLE SIZE 0.261
LOAD, g 10
dY/dT (10X) (mils/min)/in ___

(0.1)
(0.2)

MEASURED VARIABLE

DUPONT Instruments

Chart 21B4

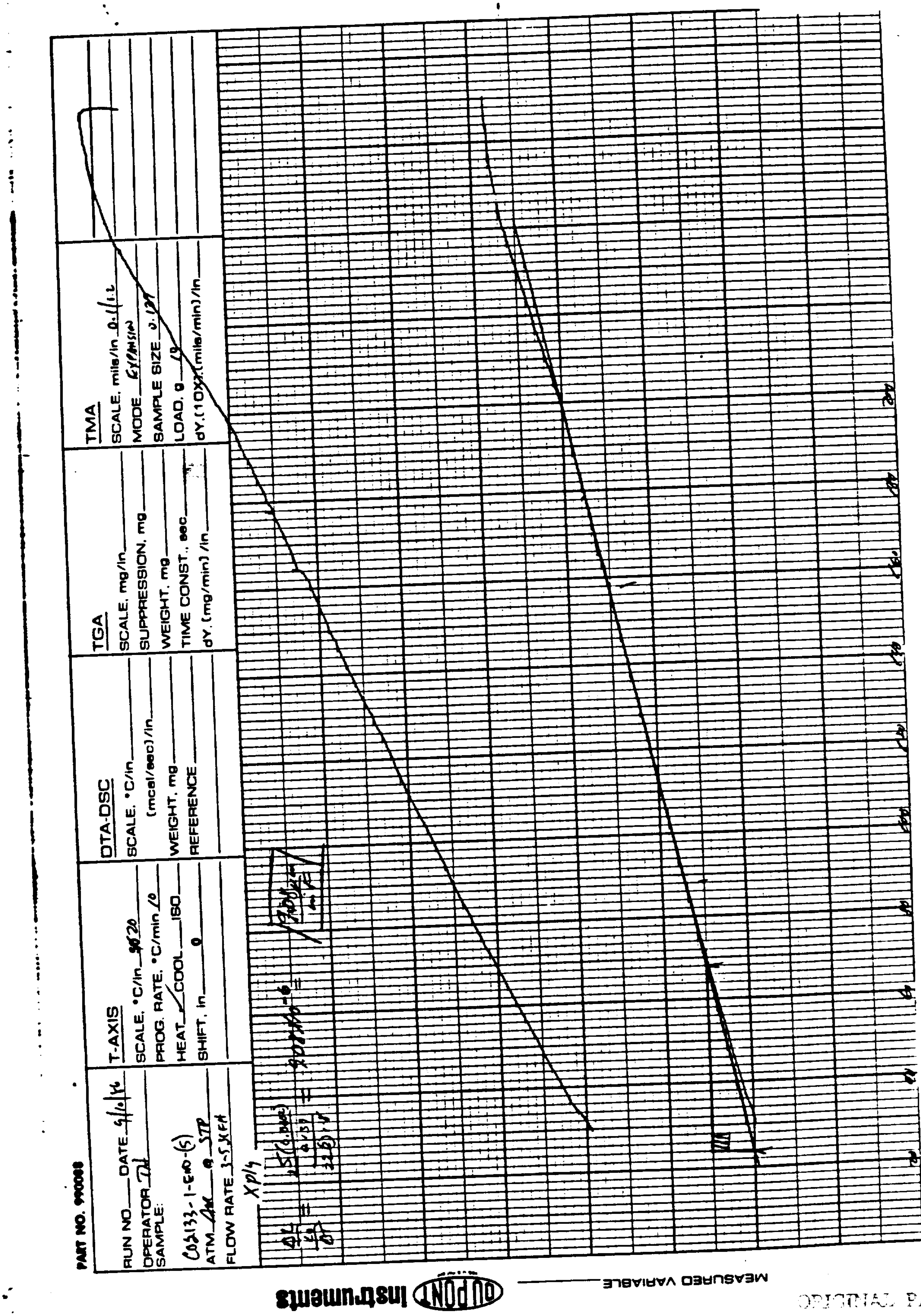

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Chart 21C1

PART NO. 990088

RUN NO ___ DATE 1/4/96
OPERATOR AK
SAMPLE:
Co2133-2-3 mer-(1)
ATM Air @ STP
FLOW RATE 25 SCFM

T-AXIS
SCALE, °C/in 50 20
PROG. RATE, °C/min 1°
HEAT ___ COOL ___ ISO ___
SHIFT, in 0

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY/dT, (mg/min)/in ___

TMA
SCALE, mils/in 0.1/0.2
MODE Expansion
SAMPLE SIZE 0.263
LOAD, g 1°
dY/dT, (10X), (mils/min)/in ___

MEASURED VARIABLE

DUPONT instruments

ORIGINAL PAGE IS
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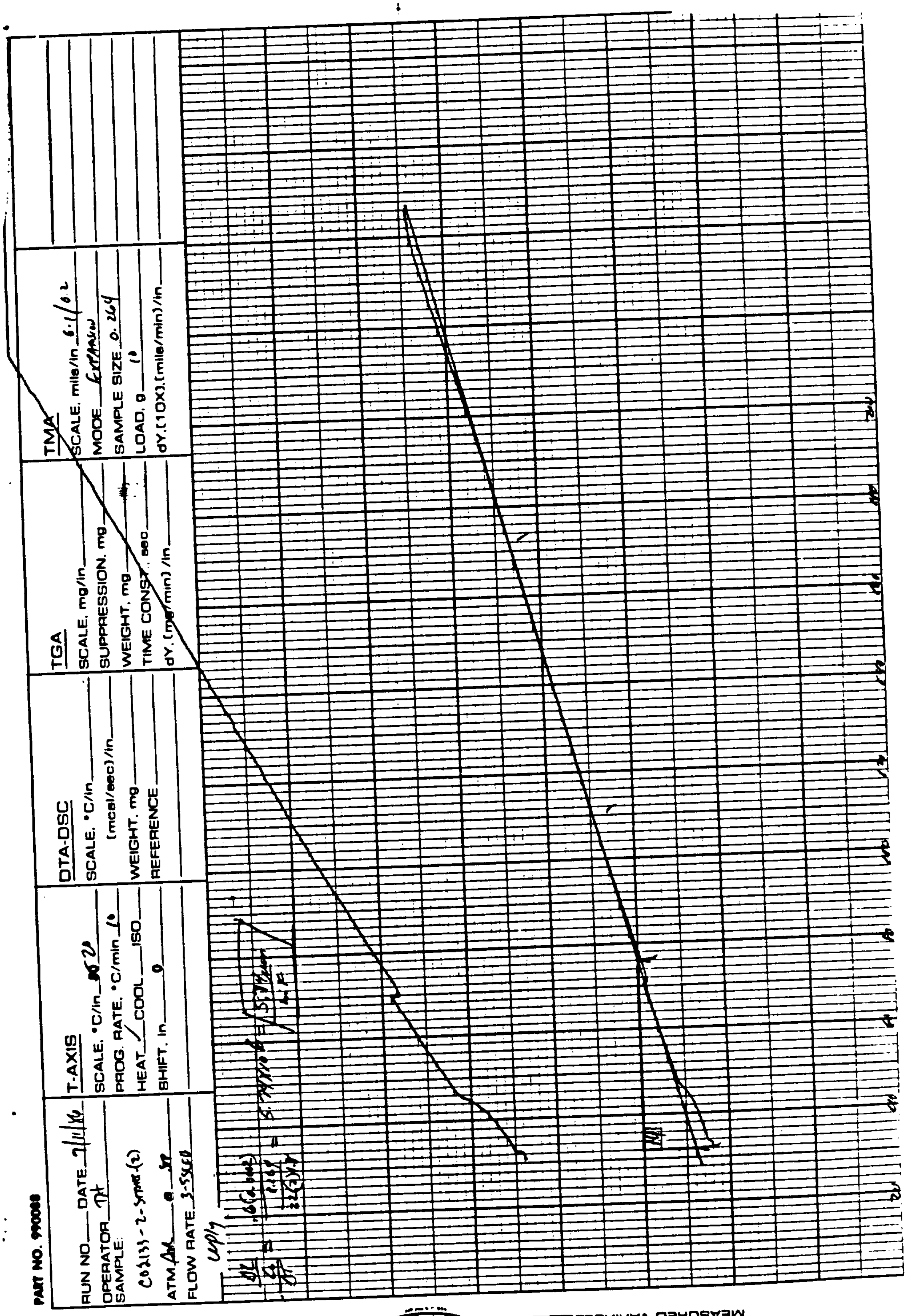


Chart 2103

PART NO. 990088

RUN NO. ___ DATE 9/14/16

OPERATOR TDT

SAMPLE: CO2/33-2-Sieve-(4)

ATM Air @ STP

FLOW RATE 1.5 SCFM

T-AXIS

SCALE, °C/in 50 20

PROG. RATE, °C/min 10

HEAT ✓ COOL ___ ISO ___

SHIFT, in 0

DTA-DSC

SCALE, °C/in ___

(mcal/sec)/in ___

WEIGHT, mg ___

REFERENCE ___

TGA

SCALE, mg/in ___

SUPPRESSION, mg ___

WEIGHT, mg ___

TIME CONST., sec ___

dY/dT (mg/min)/in ___

TMA

SCALE, mils/in 0.1/0.2

MODE Extrude

SAMPLE SIZE 0.1 g

LOAD, g ___

dY/dT (10X) (mils/min)/in ___

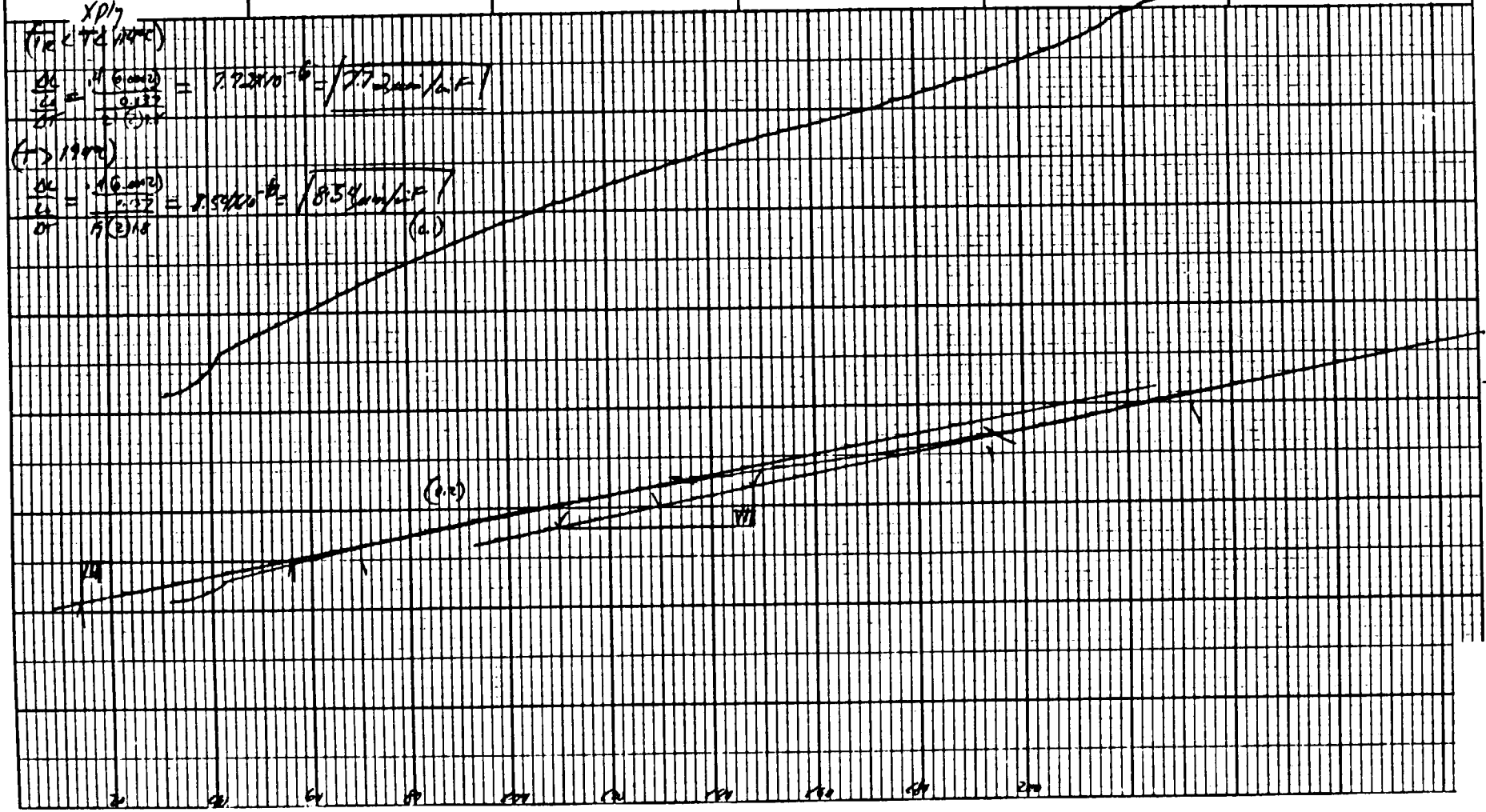
MEASURED VARIABLE

DUPONT instruments

PART NO. 990088

RUN NO.___ DATE 9/10/96	T-AXIS	DTA-DSC	TGA	TMA	
OPERATOR TH	SCALE, °C/in 50 20	SCALE, °C/in	SCALE, mg/in	SCALE, mils/in 0.1/0.2	
SAMPLE:	PROG. RATE, °C/min 10	(mcal/sec)/in	SUPPRESSION, mg	MODE Expansion	
C02133-2-Stmor-(5)	HEAT ✓ COOL ___ ISO ___	WEIGHT, mg	WEIGHT, mg	SAMPLE SIZE 0.137	
ATM Air @ STP	SHIFT, in 0	REFERENCE	TIME CONST., sec	LOAD, g 10	
FLOW RATE 3-5 SCFH			dY, (mg/min) /in	dY, (10X), (mils/min) /in	

XP17



MEASURED VARIABLE

DUPONT Instruments

Chart 2104

Chart 21D1

PART NO. 990088

RUN NO ____ DATE 3/14/86

OPERATOR (1)

SAMPLE: C02133-2-FUD-(1)

ATM Air @ 3cc

FLOW RATE 3-5SCFH

w/Pig

T-AXIS

SCALE, °C/in 50 20

PROG. RATE, °C/min 10

HEAT ____ COOL ____ ISO ____

SHIFT, in ____ 0

DTA-DSC

SCALE, °C/in ____

(mcal/sec)/in ____

WEIGHT, mg ____

REFERENCE ____

TGA

SCALE, mg/in ____

SUPPRESSION, mg ____

WEIGHT, mg ____

TIME CONST., sec ____

dY/(mg/min)/in ____

TMA

SCALE, mils/in 0.1/0.2

MODE Expand

SAMPLE SIZE 0.264

LOAD, g ____

dY/(10X)(mils/min)/in ____

MEASURED VARIABLE

DUPONT Instruments

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Chart 21D2

PART NO. 990088

RUN NO ___ DATE 9/11/96
OPERATOR TH
SAMPLE: [illegible]
ATM Air @ SCF
FLOW RATE 3.5 scfh

T-AXIS
SCALE, °C/in 50
PROG. RATE, °C/min 1
HEAT ✓ COOL ___ ISO ___
SHIFT, in 0

DTA-DSC
SCALE, °C/in ___
[mcal/sec]/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY, (mg/min) /in ___

TMA
SCALE, mils/in 0.1/0.1
MODE Expansion
SAMPLE SIZE .262
LOAD, g 0
dY, (mils/min) /in ___

MEASURED VARIABLE

DUPONT instruments

Chart 2103

PART NO. 990088

RUN NO ____ DATE 3/9/96
OPERATOR RH
SAMPLE:
CO_2(3) - 2-EO - (4)
ATM Air @ STP
FLOW RATE 1-SSCM
X pt 1

T-AXIS
SCALE, °C/in 20
PROG. RATE, °C/min 10
HEAT ✓ COOL ___ ISO ___
SHIFT, in 0

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY/(mg/min)/in ___

TMA
SCALE, mils/in 0.1/0.2
MODE Expand
SAMPLE SIZE 0.132
LOAD, g ___ 1
dY/(10X)/(mils/min)/in ___

MEASURED VARIABLE

DUPONT Instruments

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PART NO. 990088

RUN NO. ___ DATE 9/10/92
OPERATOR TH
SAMPLE: Co 2133-2-End-(5)
ATM. Air @ RT
FLOW RATE 1 SCFM
Y pl 7

T-AXIS
SCALE, °C/in 50 20
PROG. RATE, °C/min 10
HEAT ✓ COOL ___ ISO ___
SHIFT, in 0

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

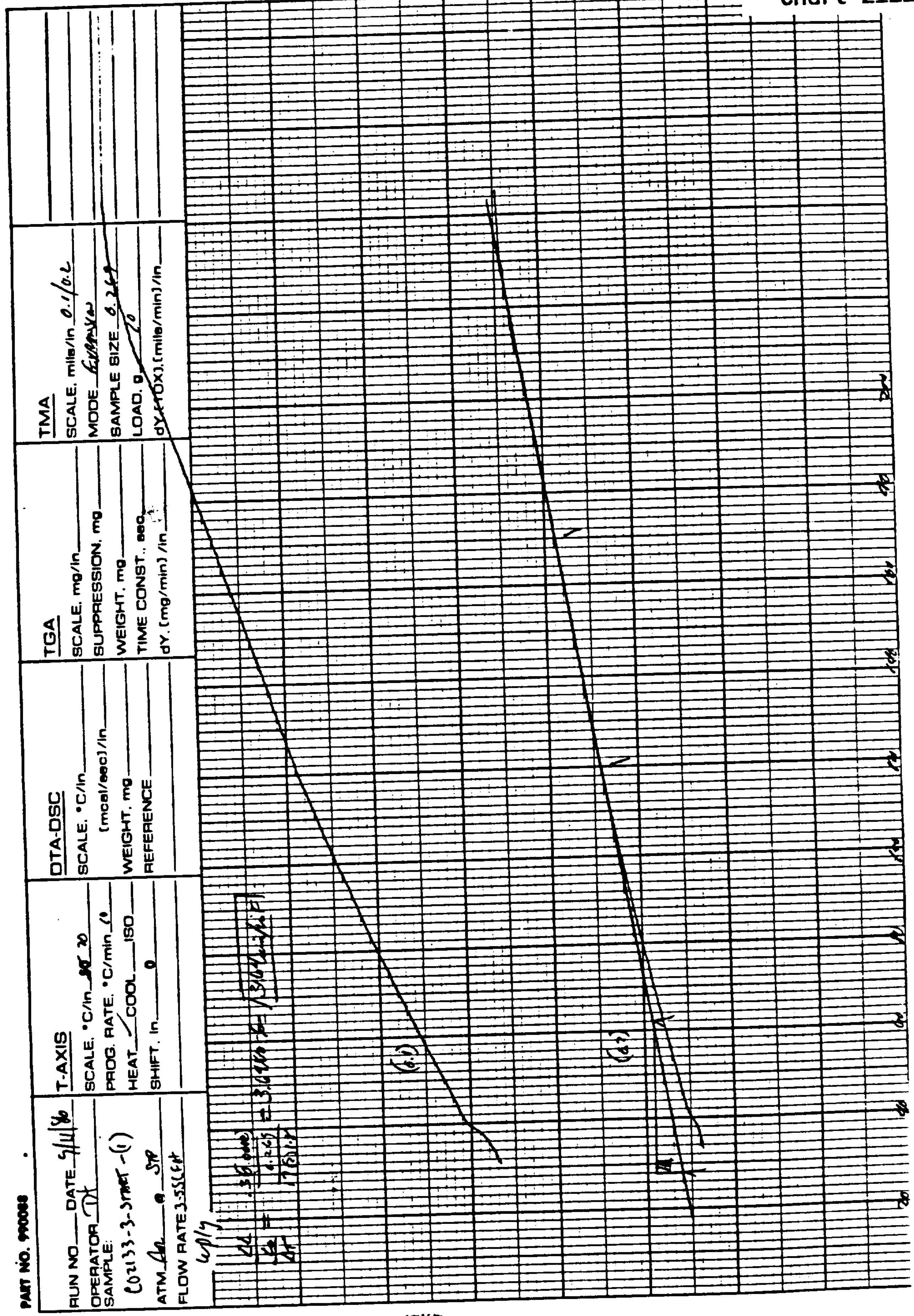
TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec. ___
dY/(mg/min)/in ___

TMA
SCALE, mils/in 4.1/0.2
MODE Expanded
SAMPLE SIZE 0.132
LOAD, g 10
dY/(10X)/(mils/min)/in ___

MEASURED VARIABLE

DUPONT Instruments

Chart 21E1



DU PONT Instruments

Chart 21E2

PART NO. 990088

RUN NO ____ DATE 9/11/96
OPERATOR ____
SAMPLE 12/13 - 3 - Sprint - (c)
ATM Air @ STP
FLOW RATE 3-5 SCFH
w/ PLY

T-AXIS
SCALE, °C/in 50 20
PROG. RATE, °C/min 10
HEAT ✓ COOL ____ ISO ____
SHIFT, in 0

DTA-DSC
SCALE, °C/in ____
(mcal/sec)/in ____
WEIGHT, mg ____
REFERENCE ____

TGA
SCALE, mg/in ____
SUPPRESSION, mg ____
WEIGHT, mg ____
TIME CONST., sec ____
dY/dT (mg/min)/in ____

TMA
SCALE, mils/in 0.1/0.2
MODE Expansion
SAMPLE SIZE 0.264
LOAD, g 10
dY/dT (10X) (mils/min)/in ____

MEASURED VARIABLE

DUPONT Instruments

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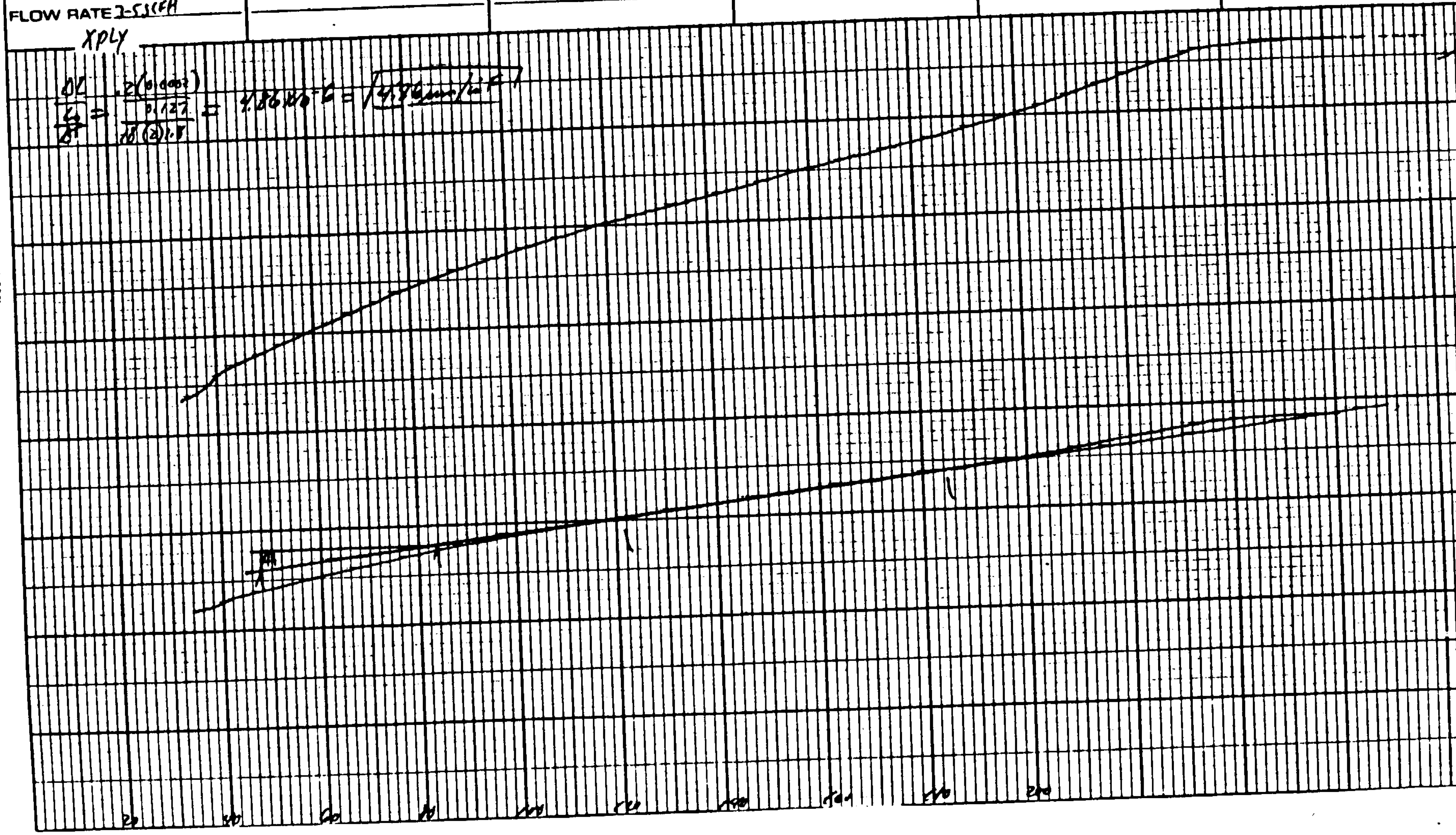
PART NO. 990088

RUN NO.___ DATE 9/10/84	**T-AXIS**	**DTA-DSC**	**TGA**	**TMA**
OPERATOR TH	SCALE, °C/in 50 20	SCALE, °C/in___	SCALE, mg/in___	SCALE, mils/in 0.1/0.2
SAMPLE: C02133-3-START-(4)	PROG. RATE, °C/min 10	(mcal/sec)/in___	SUPPRESSION, mg___	MODE EXPANSION
ATM Air @ STP	HEAT ✓ COOL___ ISO___	WEIGHT, mg___	WEIGHT, mg___	SAMPLE SIZE 0.127
FLOW RATE 2-SSCFH	SHIFT, in. 0	REFERENCE___	TIME CONST., sec.___	LOAD, g 10
			dY, (mg/min)/in___	dY, (10X), (mils/min)/in___

XPLY

$\frac{\Delta L}{L} / \Delta T = \frac{2(0.0002)/0.127}{18(2)1.8} = 4.86\times10^{-6} = 4.86\ \mu in/in\ °F$



DU PONT Instruments

MEASURED VARIABLE

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Chart 21F1

PART NO. 990088

RUN NO. ___ DATE 9/11/86

OPERATOR TH

SAMPLE: (*2133-3-E90-(1)

ATM Air @ 30

FLOW RATE 2-SSCM W PLY

T-AXIS

SCALE, °C/in 50 10

PROG. RATE, °C/min 10

HEAT ___ COOL 180

SHIFT, in ___ 0

DTA-DSC

SCALE, °C/in ___

(mcal/sec)/in ___

WEIGHT, mg ___

REFERENCE ___

TGA

SCALE, mg/in ___

SUPPRESSION, mg ___

WEIGHT, mg ___

TIME CONST., sec ___

dY, (mg/min)/in ___

TMA

SCALE, mils/in 4.4/4.2

MODE Expansion

SAMPLE SIZE 4.246

LOAD, g ___

dY, (10X), (mils/min)/in ___

MEASURED VARIABLE

DUPONT instruments

Chart 21F2

PART NO. 990088

RUN NO. ___ DATE 9/11/92
OPERATOR DK
SAMPLE:
Co(13)-3-Eno-(2)
ATM Air @ STP
FLOW RATE 3-5SCFH
w/o1y

T-AXIS
SCALE, °C/in 30
PROG. RATE, °C/min 10
HEAT ✓ COOL ___ ISO ___
SHIFT, in 0

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY/dT (mg/min)/in ___

TMA
SCALE, mils/in Auto
MODE Expansion
SAMPLE SIZE 0.267
LOAD, g 10
dY/dT (10X) (mils/min)/in ___

(1)
(2)

DUPONT Instruments

MEASURED VARIABLE

Chart 21F4

PART NO. 990088

RUN NO. ___ DATE 2/10/92
OPERATOR TH
SAMPLE:
602133-3-E90-(5)
ATM Air @ STP
FLOW RATE 3.55(64)
X PLY

T-AXIS
SCALE, °C/in 50
PROG. RATE, °C/min 10
HEAT ✓ COOL ___ ISO ___
SHIFT, in 0

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY/dT (mg/min)/in ___

TMA
SCALE, mils/in 0.1/0.2
MODE Expansion
SAMPLE SIZE .135
LOAD, g 10
dY/dT (10X) (mils/min)/in ___

MEASURED VARIABLE

DUPONT Instruments

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Chart 2161

PART NO. 990088

RUN NO. ____ DATE 2/11/86
OPERATOR TH
SAMPLE:
(2033-4-SHORT-(1)
ATM. Air @ SP
FLOW RATE 3-SCFH
W/PLY

T-AXIS
SCALE, °C/in 50/20
PROG. RATE, °C/min 10
HEAT ✓ COOL ___ ISO
SHIFT, in ___ 0

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY/dT (mg/min)/in ___

TMA
SCALE, mils/in 0.1/62
MODE Expansion
SAMPLE SIZE 0.250
LOAD, g ___
dY/dT (10X) (mils/min)/in ___

MEASURED VARIABLE

DUPONT instruments

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Chart 2162

PART NO. 990068

RUN NO. ___ DATE 9/11/96
OPERATOR AH
SAMPLE
C0133-9-SMART-(2)
ATM Air @ STP
FLOW RATE 2-SYSTEM
wpfy

T-AXIS
SCALE, °C/in 50 20
PROG. RATE, °C/min 10
HEAT ✓ COOL 180
SHIFT, in 0

DTA-OSC
SCALE, °C/in
(mcal/sec)/in
WEIGHT, mg
REFERENCE

TGA
SCALE, mg/in
SUPPRESSION, mg
WEIGHT, mg
TIME CONST, sec
dY, (mg/min)/in

TMA
SCALE, mils/in 0.1/0.2
MODE Expansion
SAMPLE SIZE 0.258
LOAD, g 10
dY, (10X), (mils/min)/in

(0.1)
(0.2)

DuPont Instruments

MEASURED VARIABLE

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Chart 2163

PART NO. 990088

RUN NO. ___ DATE 1/11/82
OPERATOR TH
SAMPLE:
Co 2133-4-Spacer-(4)
ATM. Air @ STP
FLOW RATE Static
X pl y

T-AXIS
SCALE, °C/in 5 & 20
PROG. RATE, °C/min 20
HEAT ✓ COOL ___ ISO ___
SHIFT, in ___ 0 ___

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY/(mg/min)/in ___

TMA
SCALE, mils/in 0.1/0.2
MODE Expansion
SAMPLE SIZE 0.135
LOAD, g 10
dY/(10X)/(mils/min)/in ___

(1)

(2)

(3)

MEASURED VARIABLE

DUPONT instruments

Chart 21G4

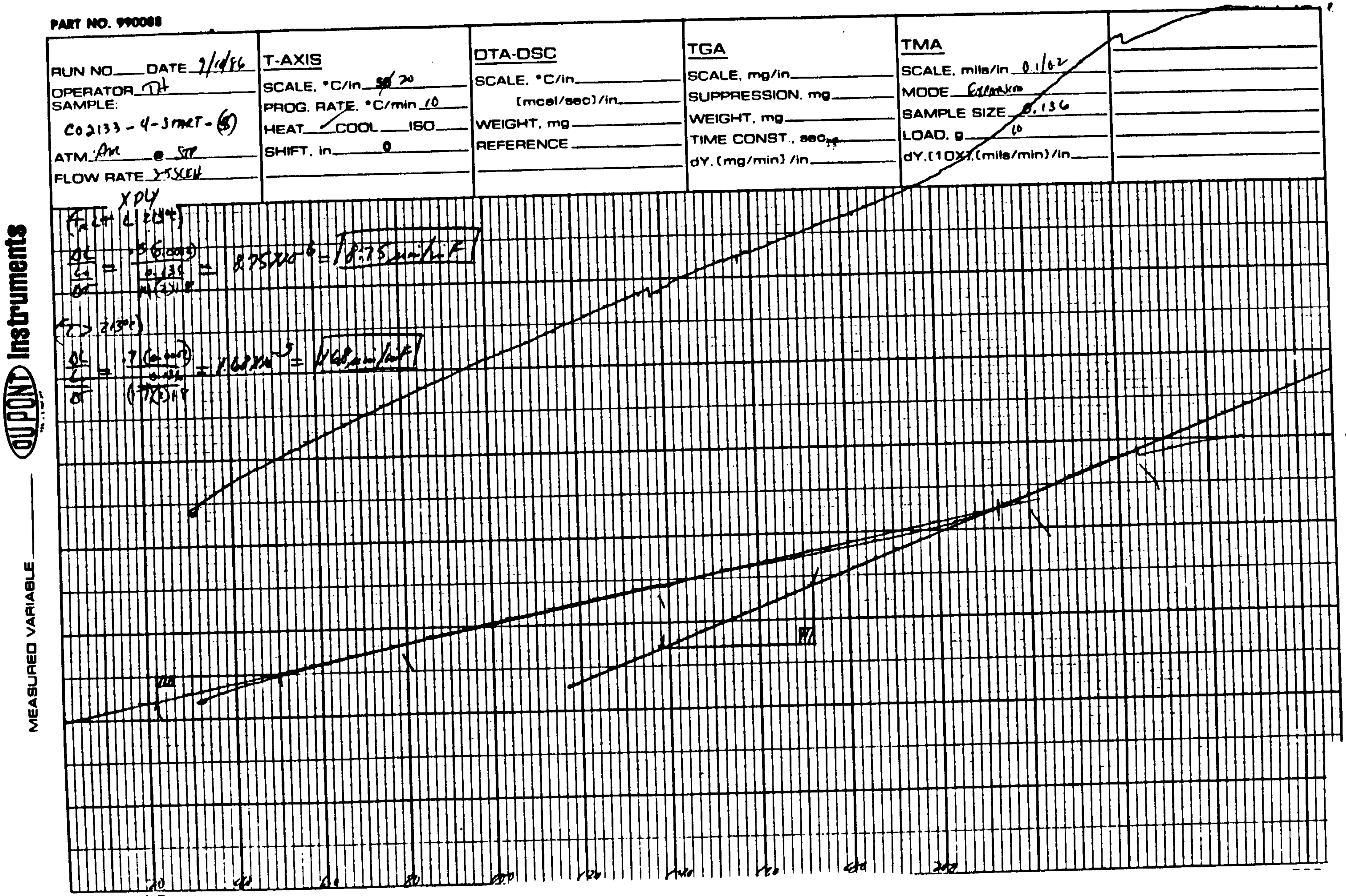

Chart 21H1

PART NO. 990088

RUN NO ___ DATE 1/11/91

OPERATOR TA

SAMPLE: Co2133-4-EAD-(1)

ATM. Air @ 50cc

FLOW RATE 2-screen

w ply

T-AXIS

SCALE, °C/in 50/20

PROG. RATE, °C/min 10

HEAT ✓ COOL 150

SHIFT, in 0

DTA-DSC

SCALE, °C/in ___

(mcal/sec)/in ___

WEIGHT, mg ___

REFERENCE ___

TGA

SCALE, mg/in ___

SUPPRESSION, mg ___

WEIGHT, mg ___

TIME CONST., sec 1

dY/dt (mg/min) /in ___

TMA

SCALE, mils/in 4/div

MODE Expansion

SAMPLE SIZE 6.25

LOAD, g 10

dY/dt (10X) (mils/min) /in ___

MEASURED VARIABLE

DUPONT Instruments

Chart 21H2

PART NO. 990068

RUN NO. ___ DATE 4/12/96
OPERATOR TH
SAMPLE:
C6213-4-Exp-(2)
ATM Air @ 50
FLOW RATE 3-5X5H

T-AXIS
SCALE, °C/in 50 20
PROG. RATE, °C/min 10
HEAT ✓ COOL ___ ISO ___
SHIFT, in 0

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY, (mg/min) /in ___

TMA
SCALE, mils/in 5.1/0.2
MODE Expansion
SAMPLE SIZE 0.240
LOAD, g ___
dY, (10X), (mils/min) /in ___

MEASURED VARIABLE

DUPONT instruments

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PART NO. 990088

DUPONT Instruments

RUN NO. ___ DATE 9/11/96	T-AXIS	DTA-DSC	TGA	TMA	
OPERATOR TH	SCALE, °C/in 50 20	SCALE, °C/in	SCALE, mg/in	SCALE, mils/in 0.1/0.2	
SAMPLE: C02133-4-END-(4)	PROG. RATE, °C/min 10	(mcal/sec)/in	SUPPRESSION, mg	MODE Expansion	
ATM Air @ 40	HEAT ✓ COOL ___ ISO ___	WEIGHT, mg	WEIGHT, mg	SAMPLE SIZE 0.134	
FLOW RATE 3.5 XFM	SHIFT, in 0	REFERENCE	TIME CONST., sec	LOAD, g C1	
X PLY			dY, (mg/min) /in	dY, (10X) (mils/min) /in	

MEASURED VARIABLE

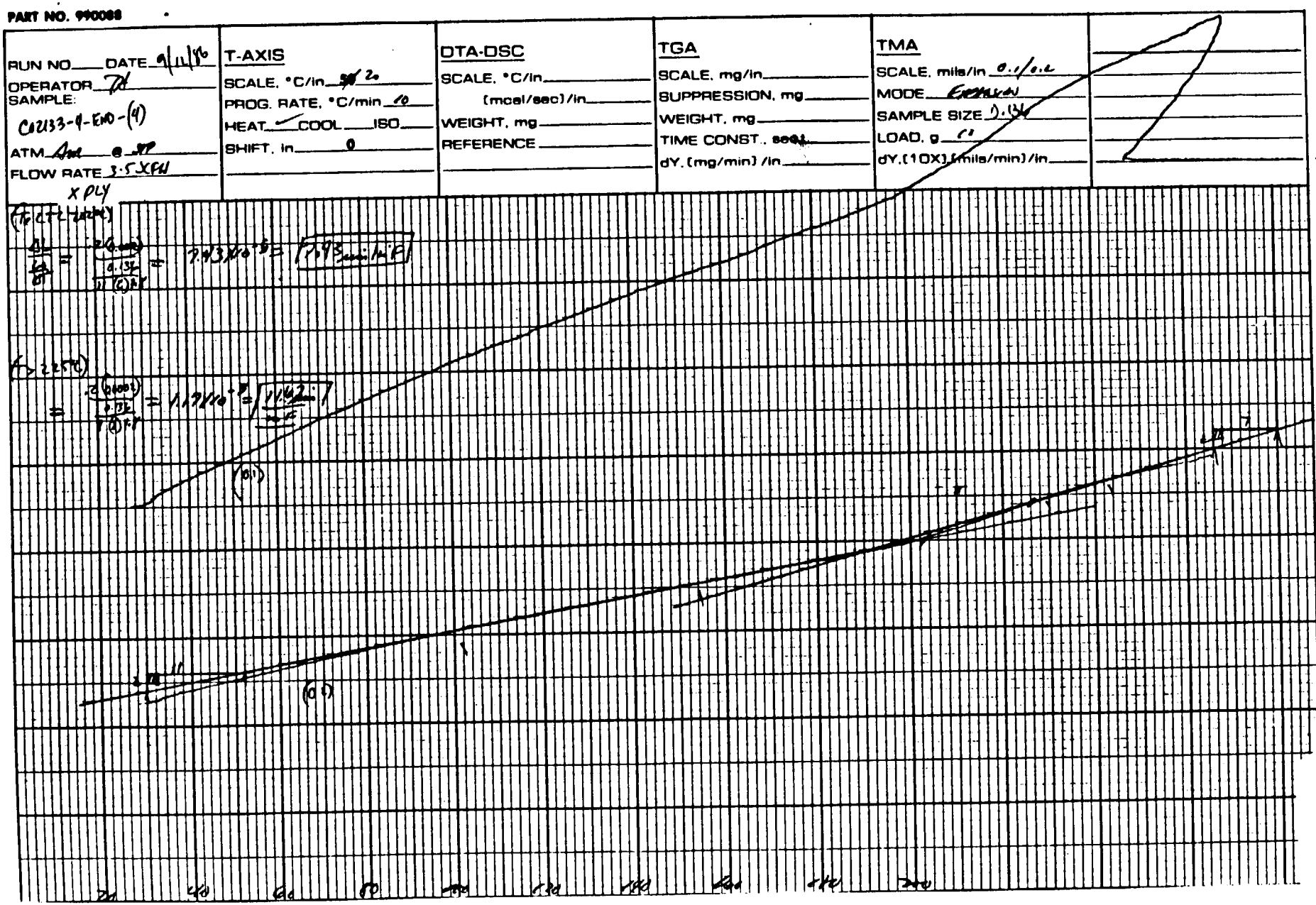

Chart 21H5

Chart 2111

PART NO. 990088

RUN NO. ___ DATE 5/14/86
OPERATOR RH
SAMPLE: Co2133 - 5- Immer-6
ATM. Air @ SR
FLOW RATE 3-5 Std w/ply

T-AXIS
SCALE. °C/in 50°C
PROG. RATE. °C/min 20
HEAT ✓ COOL ___ ISO ___
SHIFT, in 0

DTA-DSC
SCALE. °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE. mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY/dt (mg/min) /in ___

TMA
SCALE. mils/in 0.1/in
MODE Expansion
SAMPLE SIZE 0.25"
LOAD, g 10
dY/dt (10X) (mils/min) /in

(a1)

(a2)

DUPONT instruments

MEASURED VARIABLE

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Chart 2112

PART NO. 990068

RUN NO ___ DATE 9/12/96
OPERATOR TH
SAMPLE:
202193 -5-Smart (k)
ATM Air @ RT
FLOW RATE 25 ml/min
w PLY

T-AXIS
SCALE, °C/in 50 20
PROG. RATE, °C/min 20
HEAT ✓ COOL ___ ISO ___
SHIFT, in 0

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY/dT (mg/min)/in ___

TMA
SCALE, mils/in 0.4/div
MODE Expansion
SAMPLE SIZE 0.256
LOAD, g 10
dY/dT (10X) (mils/min)/in ___

MEASURED VARIABLE

DUPONT instruments

Chart 2113

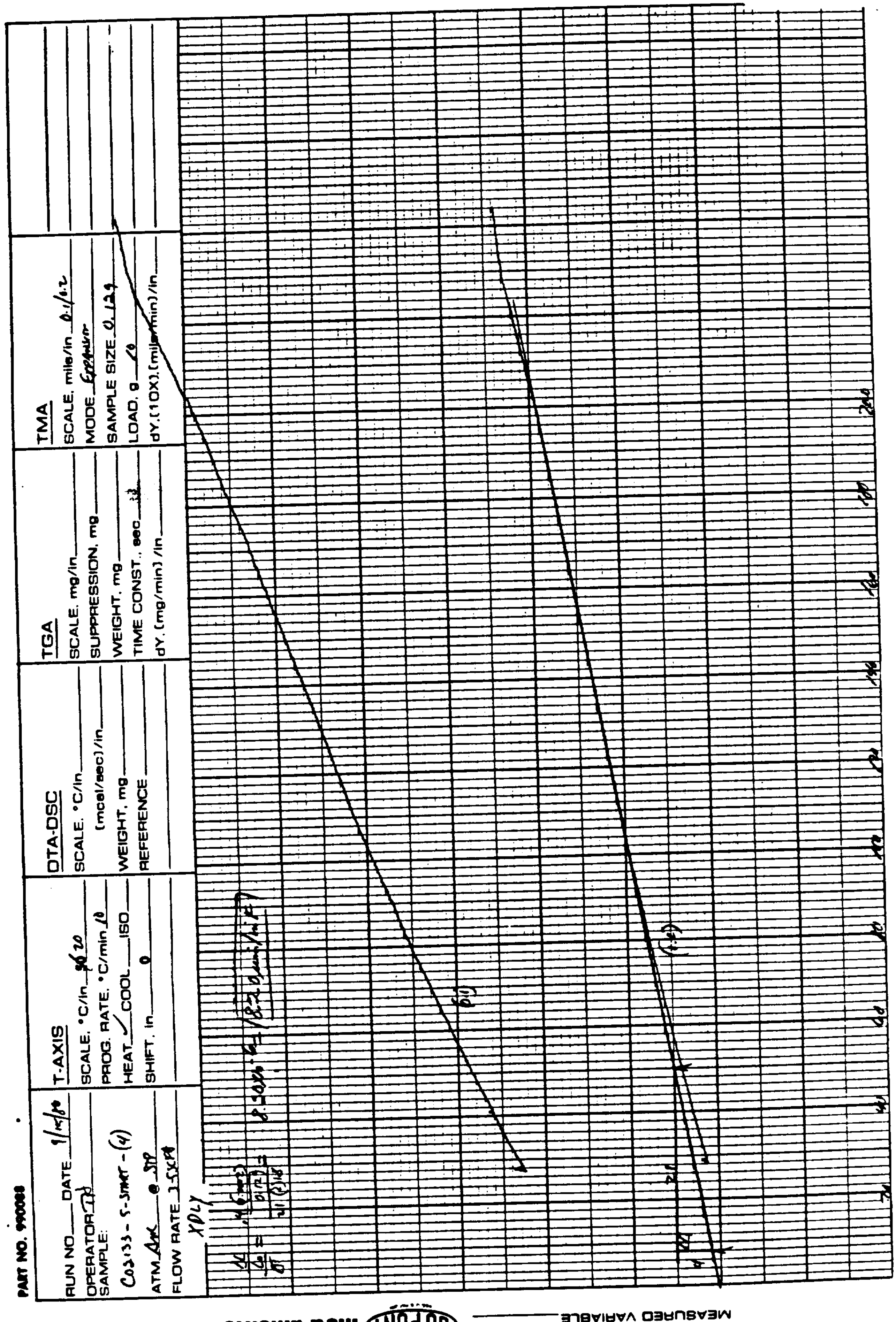

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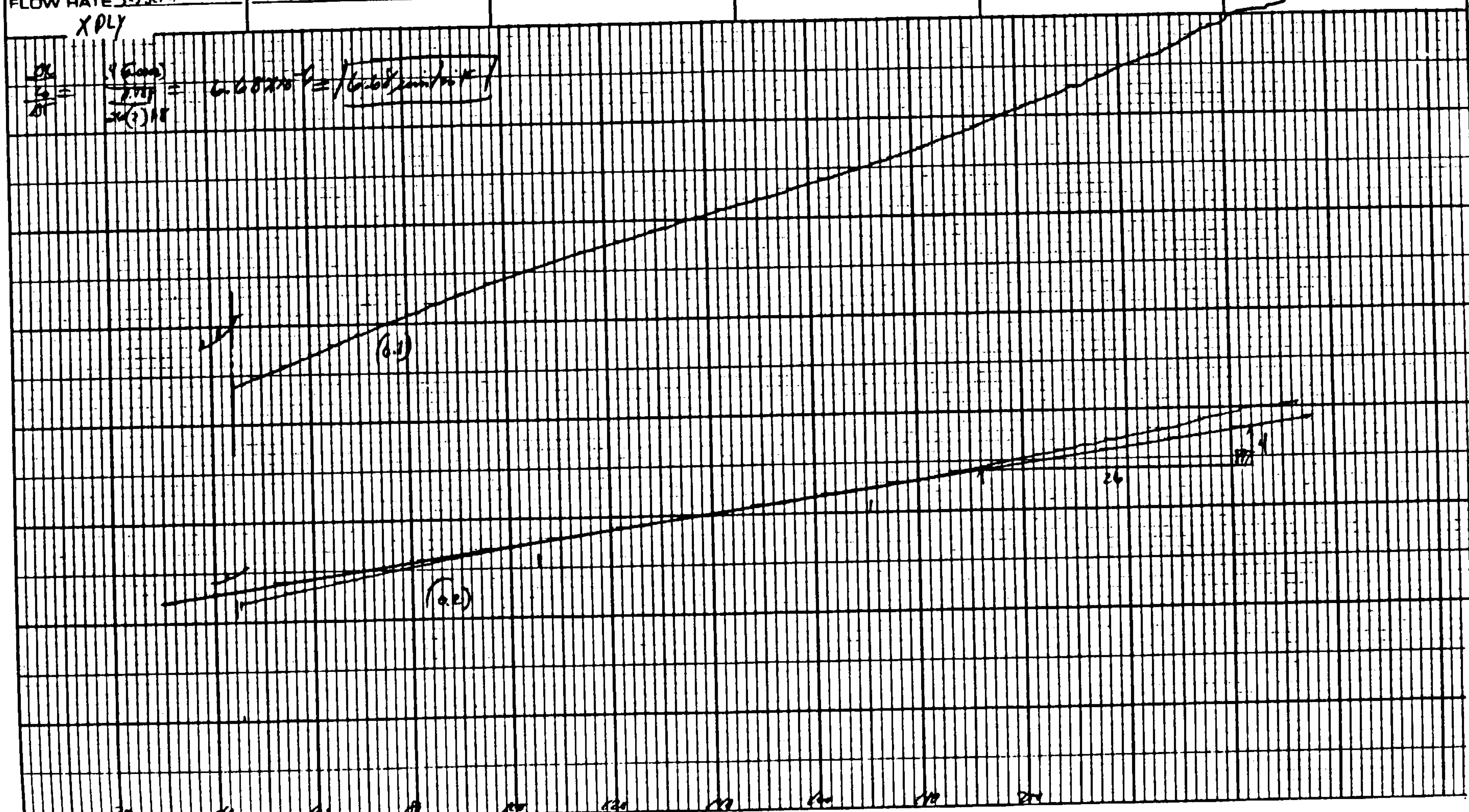
Chart 2114

PART NO. 990088

RUN NO. ____ DATE 9/15/86	**T-AXIS**	**DTA-DSC**	**TGA**	**TMA**
OPERATOR TH	SCALE, °C/in. 20	SCALE, °C/in.	SCALE, mg/in.	SCALE, mils/in. 0.1/62
SAMPLE: C02133 - 5-[illegible] - (5)	PROG. RATE, °C/min 10	(mcal/sec)/in.	SUPPRESSION, mg	MODE [illegible]
ATM [illegible] @ [illegible]	HEAT ✓ COOL ____ ISO ____	WEIGHT, mg	WEIGHT, mg	SAMPLE SIZE 0.128
FLOW RATE [illegible]	SHIFT, in. 0	REFERENCE	TIME CONST., sec.	LOAD, g 10
			dY, (mg/min)/in.	dY, (10X), (mils/min)/in.

XPLY



DUPONT Instruments

MEASURED VARIABLE

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Chart 21J1

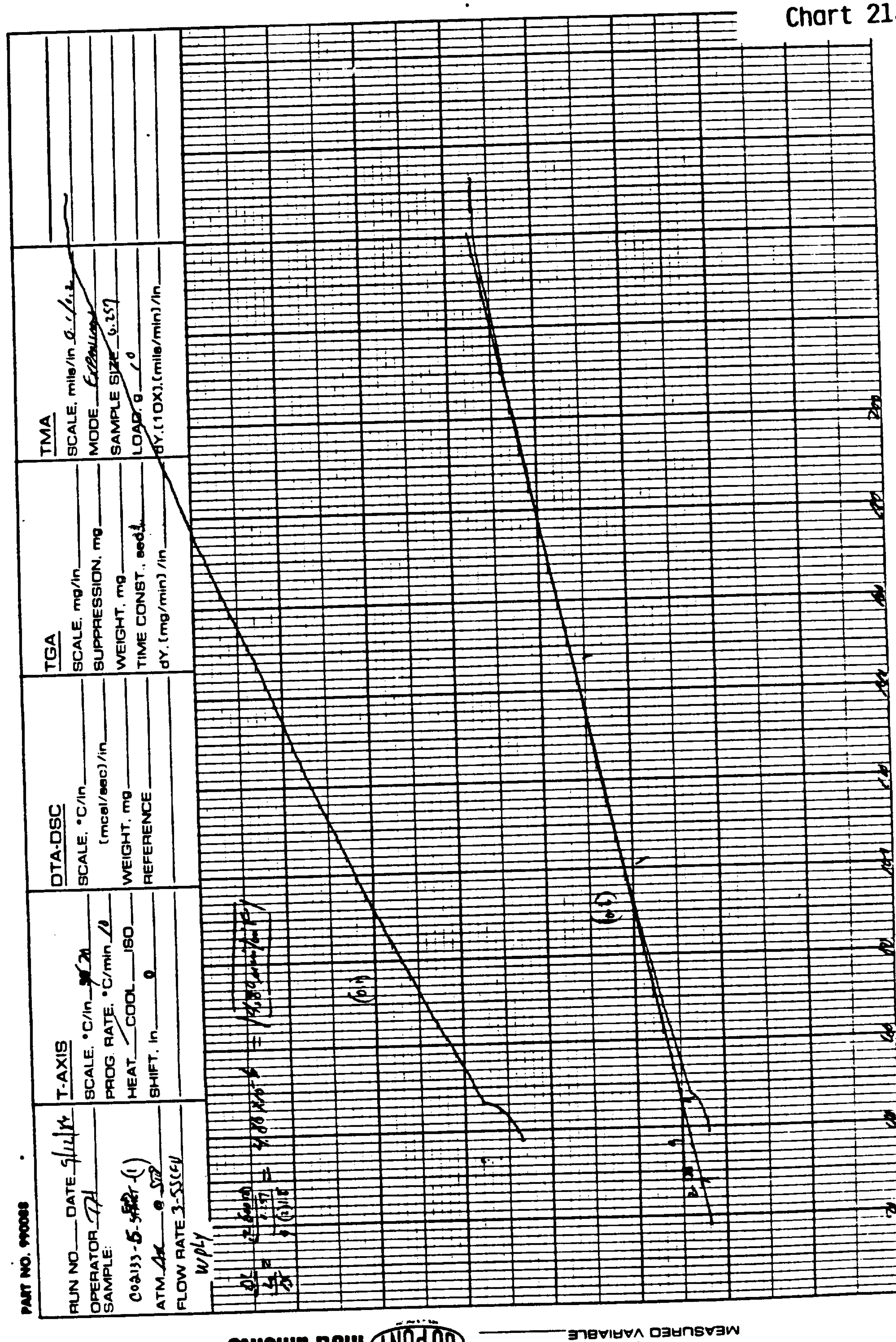

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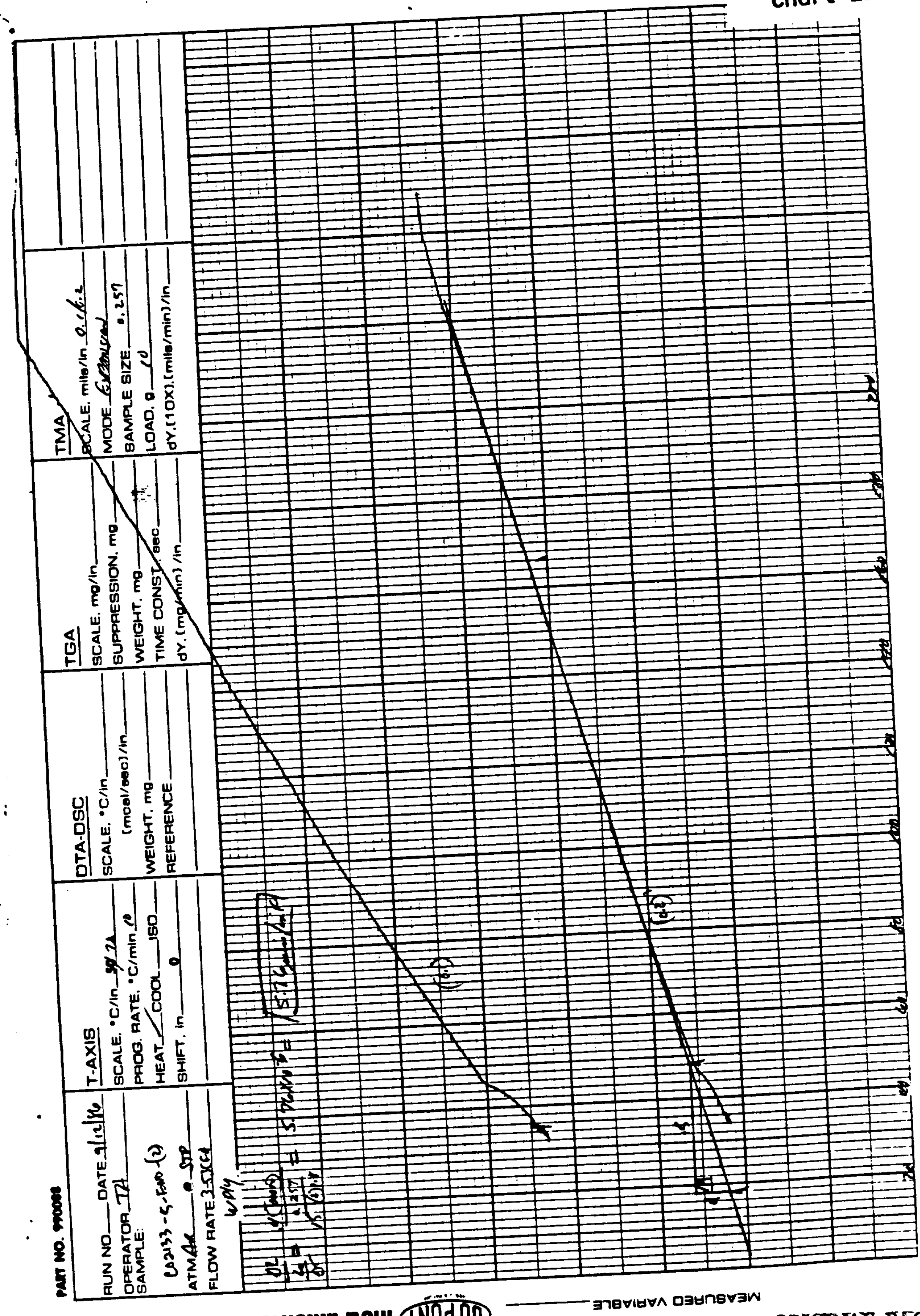
Chart 21J2



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PART NO. 990088

RUN NO ___ DATE 5/15/96 OPERATOR DH SAMPLE: Co2133-5-End-4 ATM Air @ STP FLOW RATE 3-5 SCFH	T-AXIS SCALE, °C/in 50 20 PROG. RATE, °C/min 10 HEAT ✓ COOL ___ ISO ___ SHIFT, in 0	DTA-DSC SCALE, °C/in ___ (mcal/sec)/in ___ WEIGHT, mg ___ REFERENCE ___	TGA SCALE, mg/in ___ SUPPRESSION, mg ___ WEIGHT, mg ___ TIME CONST., sec ___ dY, (mg/min) /in ___	TMA SCALE, mils/in 0.1/0.2 MODE Expansion SAMPLE SIZE 0.131 LOAD, g 10 dY, (10X), (mils/min) /in ___	

XDY

$$\frac{dL}{L_0 dT} \Rightarrow \frac{\frac{1}{25}(6.000)}{\frac{0.131}{2.54}(2)^{1.5}} = 8.48 \times 10^{-6} = \boxed{8.48\ (\mu m/m)/°C}$$

(0,1)

(0,2)

MEASURED VARIABLE ___

DUPONT Instruments

Chart 21K1

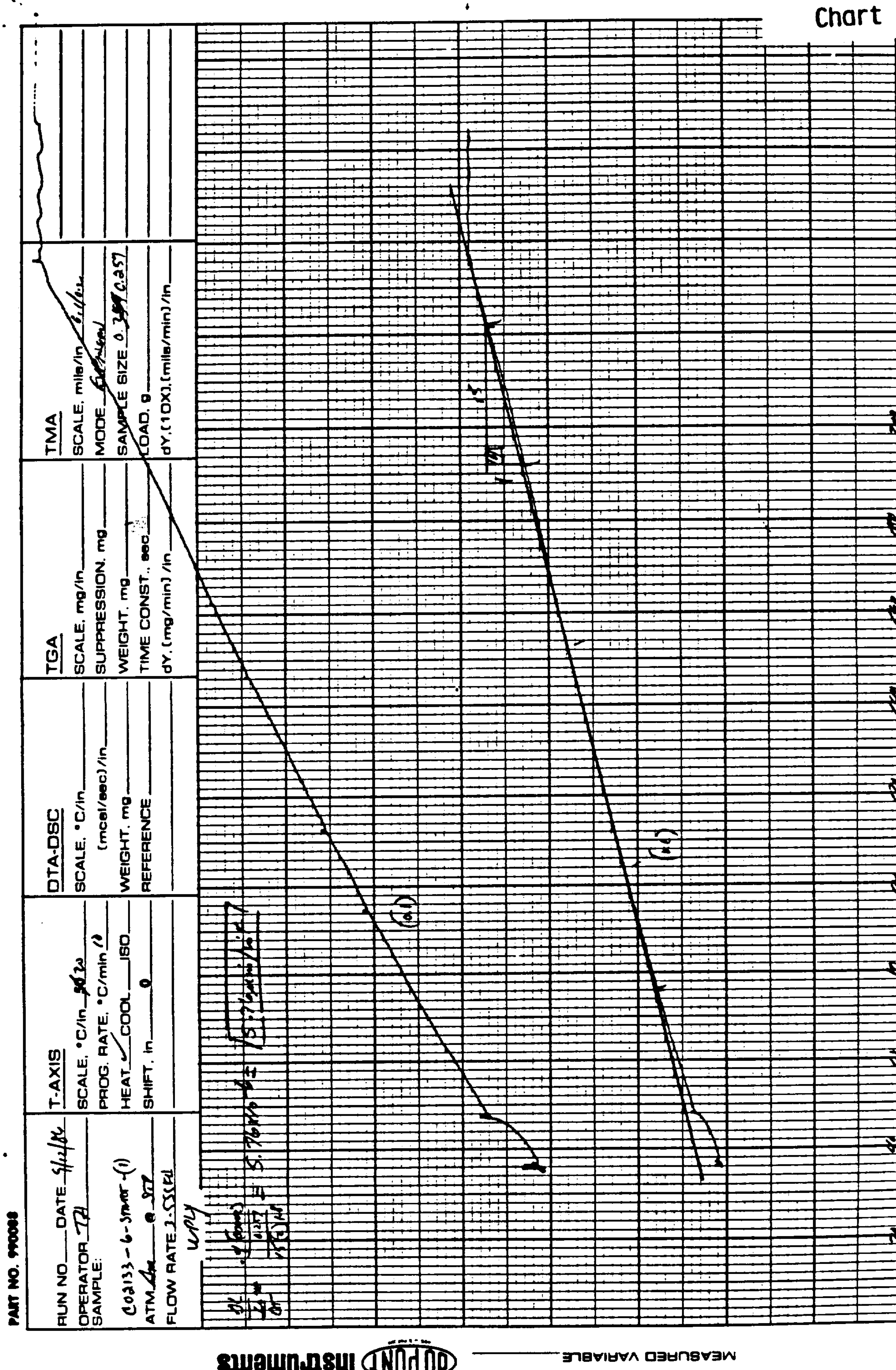

Chart 21 X2

PART NO. 990088

RUN NO ___ DATE 9/12/89

OPERATOR TH

SAMPLE:

Co(13)-6-SYNET-(2)

ATM Air @ STP

FLOW RATE 3.5SCFH

w/ply

T-AXIS

SCALE, °C/in 50/24

PROG. RATE, °C/min 20

HEAT ✓ COOL 150

SHIFT, in 0

DTA-DSC

SCALE, °C/in

(mcal/sec)/in

WEIGHT, mg

REFERENCE

TGA

SCALE, mg/in

SUPPRESSION, mg

WEIGHT, mg

TIME CONST., sec

dY, (mg/min)/in

TMA

SCALE, mils/in 0.1/0.5

MODE Expansion

SAMPLE SIZE 0.251

LOAD, g 10

dY, (10X), (mils/min)/in

MEASURED VARIABLE

DUPONT instruments

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PART NO. 990088

RUN NO.___ DATE 2/4/92

OPERATOR TH

SAMPLE: C02133-6-Insert-(4)

ATM Air @ 30

FLOW RATE 3.5 SCFH

X PLY

T-AXIS

SCALE, °C/in 20

PROG. RATE, °C/min 10

HEAT 1 COOL ISO

SHIFT, in 0

DTA-DSC

SCALE, °C/in

(mcal/sec)/in

WEIGHT, mg

REFERENCE

TGA

SCALE, mg/in

SUPPRESSION, mg

WEIGHT, mg

TIME CONST, sec

dY, (mg/min)/in

TMA

SCALE, mils/in 0.1/0.1

MODE Expansion

SAMPLE SIZE 0.139

LOAD, g 10

dY, (10X), (mils/min)/in

MEASURED VARIABLE

DUPONT Instruments

Chart 21K4

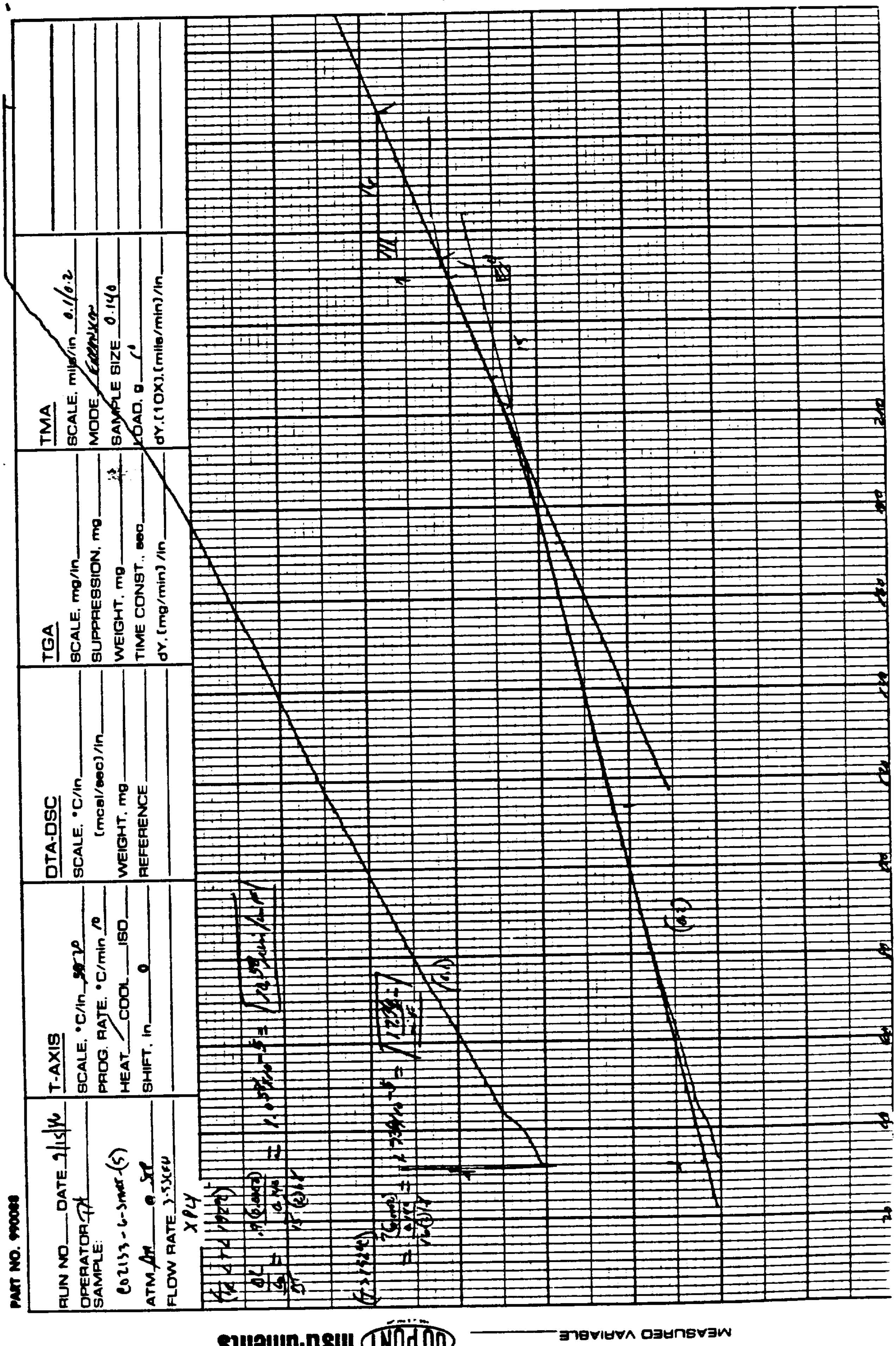

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Chart 21L1

PART NO. 990088

RUN NO ___ DATE 9/12/96
OPERATOR RH
SAMPLE: C02133-6-EAD-(1)
ATM Air @ STP
FLOW RATE 3-5 SCFH
w/ply

T-AXIS
SCALE, °C/in 50 20
PROG. RATE, °C/min 10
HEAT ✓ COOL ___ ISO ___
SHIFT, in 0

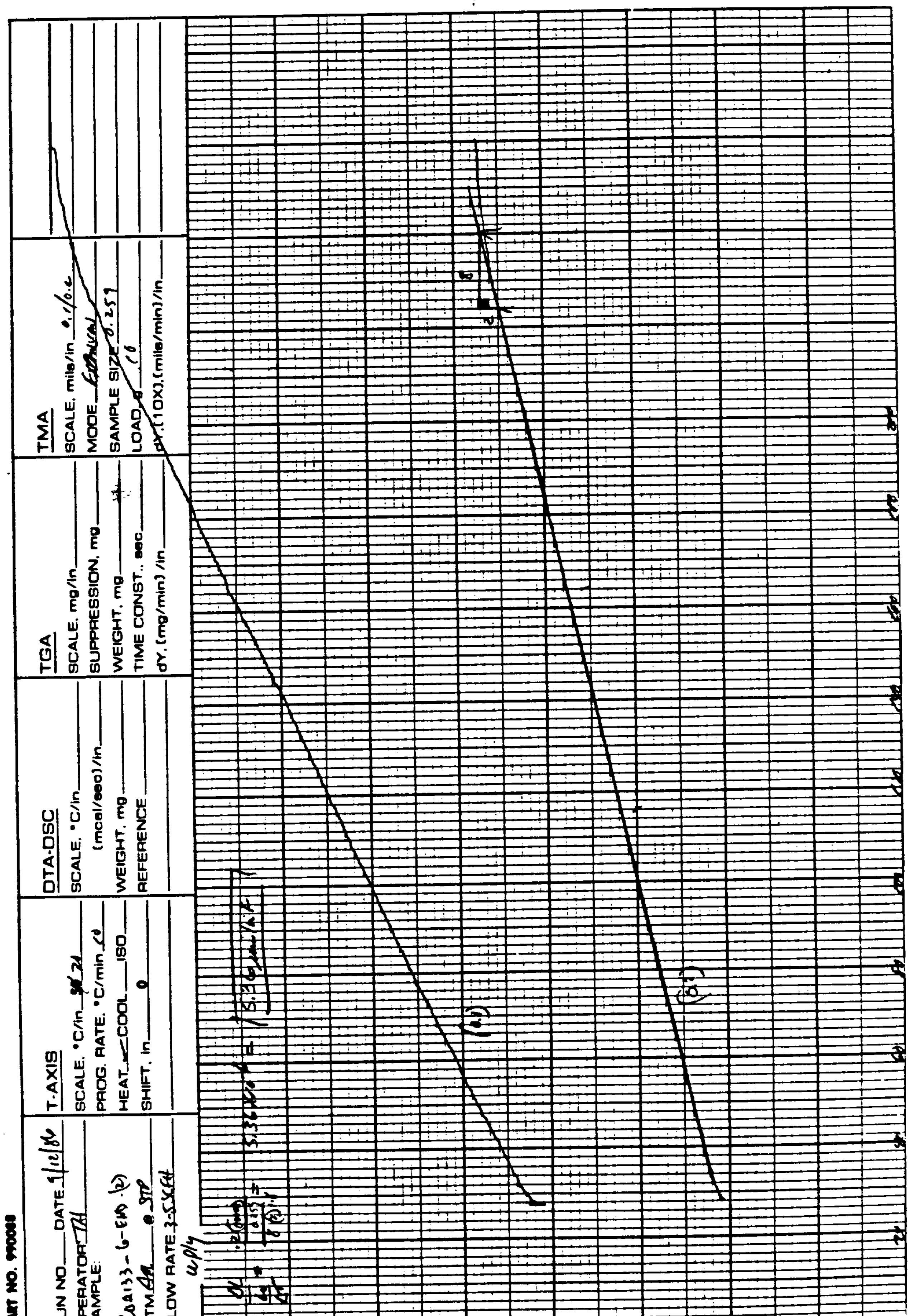
DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY/dT (mg/min)/in ___

TMA
SCALE, mils/in 0.1/0.2
MODE Expansion
SAMPLE SIZE 0.260
LOAD, g 10
dY/dT (10X) (mils/min)/in ___

MEASURED VARIABLE

DUPONT instruments



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MEASURED VARIABLE

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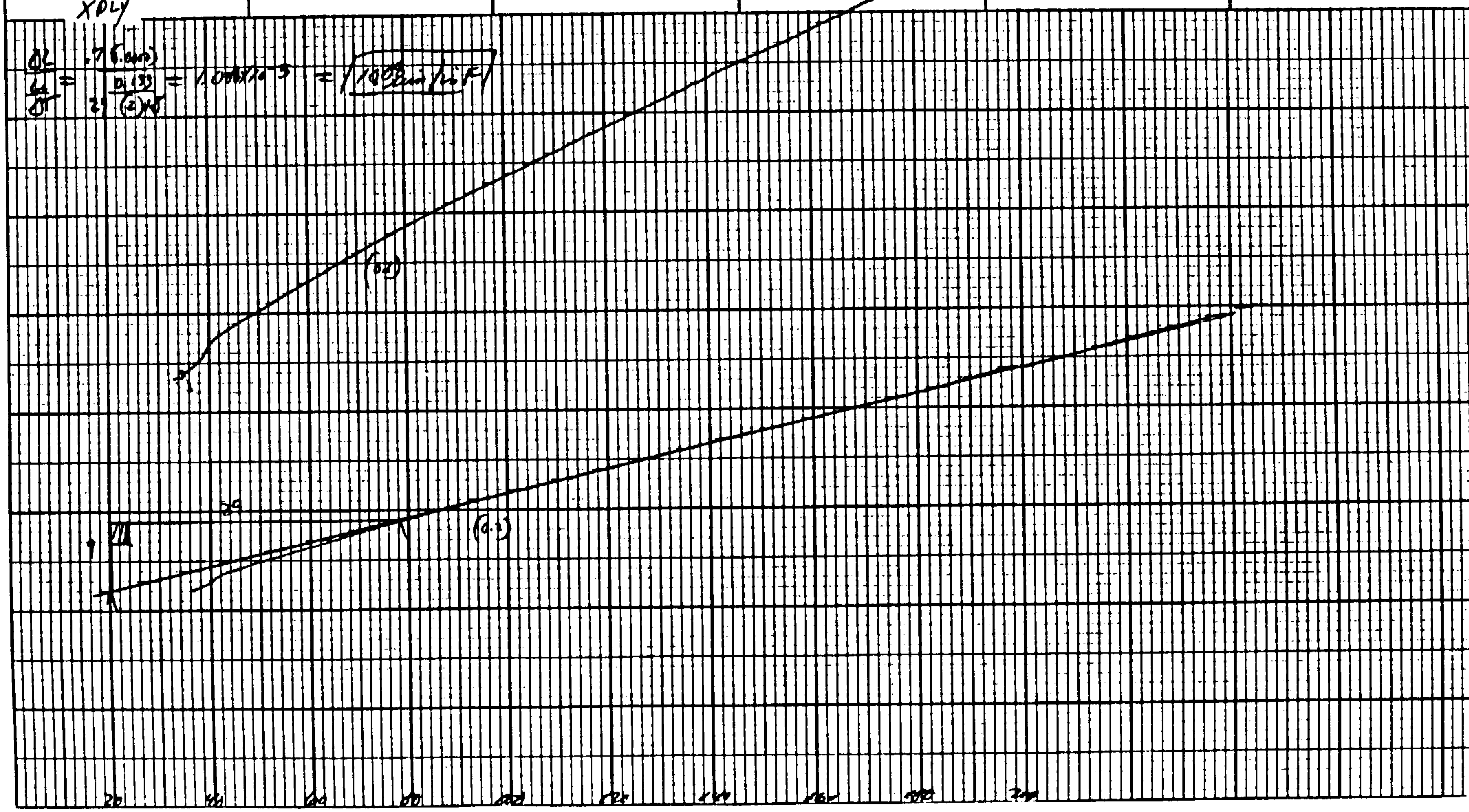
Chart 21L3

PART NO. 990088

RUN NO.____ DATE 9/15/80	**T-AXIS**	**DTA-DSC**	**TGA**	**TMA**
OPERATOR ____	SCALE, °C/in 50/20	SCALE, °C/in____	SCALE, mg/in____	SCALE, mils/in 0.1/0.2
SAMPLE: C02133-6-E40-(4)	PROG. RATE, °C/min 10	(mcal/sec)/in____	SUPPRESSION, mg____	MODE Expansion
ATM Ar @ STP	HEAT ✓ COOL____ ISO____	WEIGHT, mg____	WEIGHT, mg____	SAMPLE SIZE 0.133
FLOW RATE 3.5 CFH	SHIFT, in 0	REFERENCE____	TIME CONST., sec____	LOAD, g 10
			dY, (mg/min) /in____	dY,(10X),(mils/min)/in____

XPLY



MEASURED VARIABLE

DUPONT Instruments

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Chart 21C4

PART NO. 990088

RUN NO. ___ DATE 9/15/94
OPERATOR TH
SAMPLE:
C0233-6-Run (5)
ATM Air @ 3cc
FLOW RATE 3-5X/4

T-AXIS
SCALE, °C/in 50 10
PROG. RATE, °C/min 10
HEAT ___ COOL ___ ISO ___
SHIFT, in 0

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY, (mg/min) /in ___

TMA
SCALE, mils/in 0.1/1.0
MODE Expansion
SAMPLE SIZE 0.132
LOAD, g 10
dY, (10X), (mils/min)/in ___

1 ply

DuPont instruments

MEASURED VARIABLE

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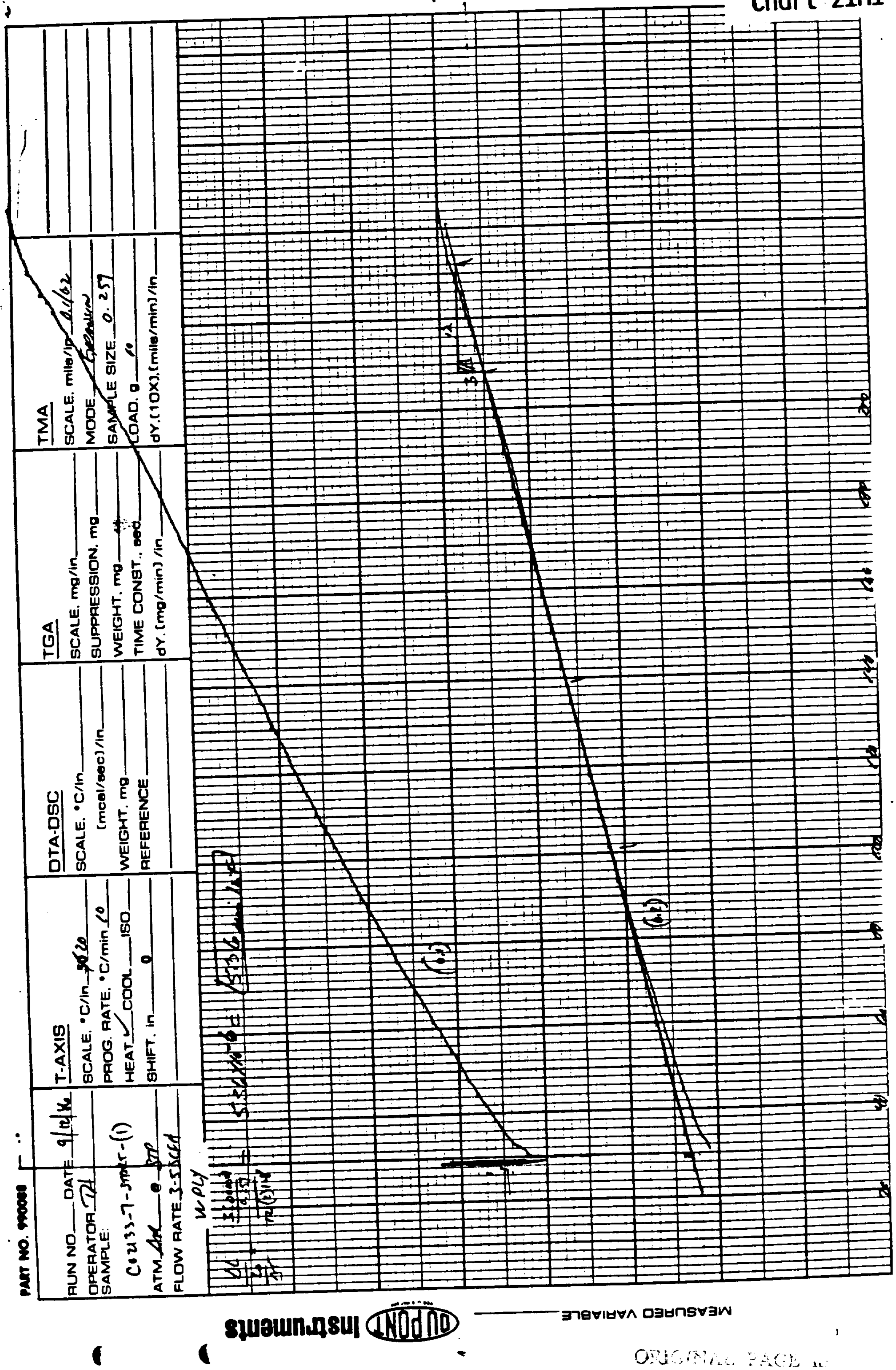
Chart 21M1



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PART NO. 990068

RUN NO ___ DATE 9/11/96	T-AXIS	DTA-DSC	TGA	TMA	
OPERATOR TH	SCALE, °C/in 50 20	SCALE, °C/in ___	SCALE, mg/in ___	SCALE, mils/in 0.1/0.2	
SAMPLE: C02133-7-Smart-(2)	PROG. RATE, °C/min 20	(mcal/sec)/in ___	SUPPRESSION, mg ___	MODE Expansion	
ATM Air @ STP	HEAT ✓ COOL ___ ISO ___	WEIGHT, mg ___	WEIGHT, mg ___	SAMPLE SIZE 0.259	
FLOW RATE 3-5 VFA w/PLY	SHIFT, in 0	REFERENCE ___	TIME CONST., sec 1	LOAD, g 10	
			dY, (mg/min) /in ___	dY, (10X), (mils/min) /in ___	

$\frac{\Delta L}{L_0} = \frac{.5(0.002)}{0.259} \div 11(2)11 = 5.90 \times 10^{-6} =$ 5.90 ppm/mK

(2-1)

(2-2)

3

4

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MEASURED VARIABLE

Chart 21N2

Chart 21M3

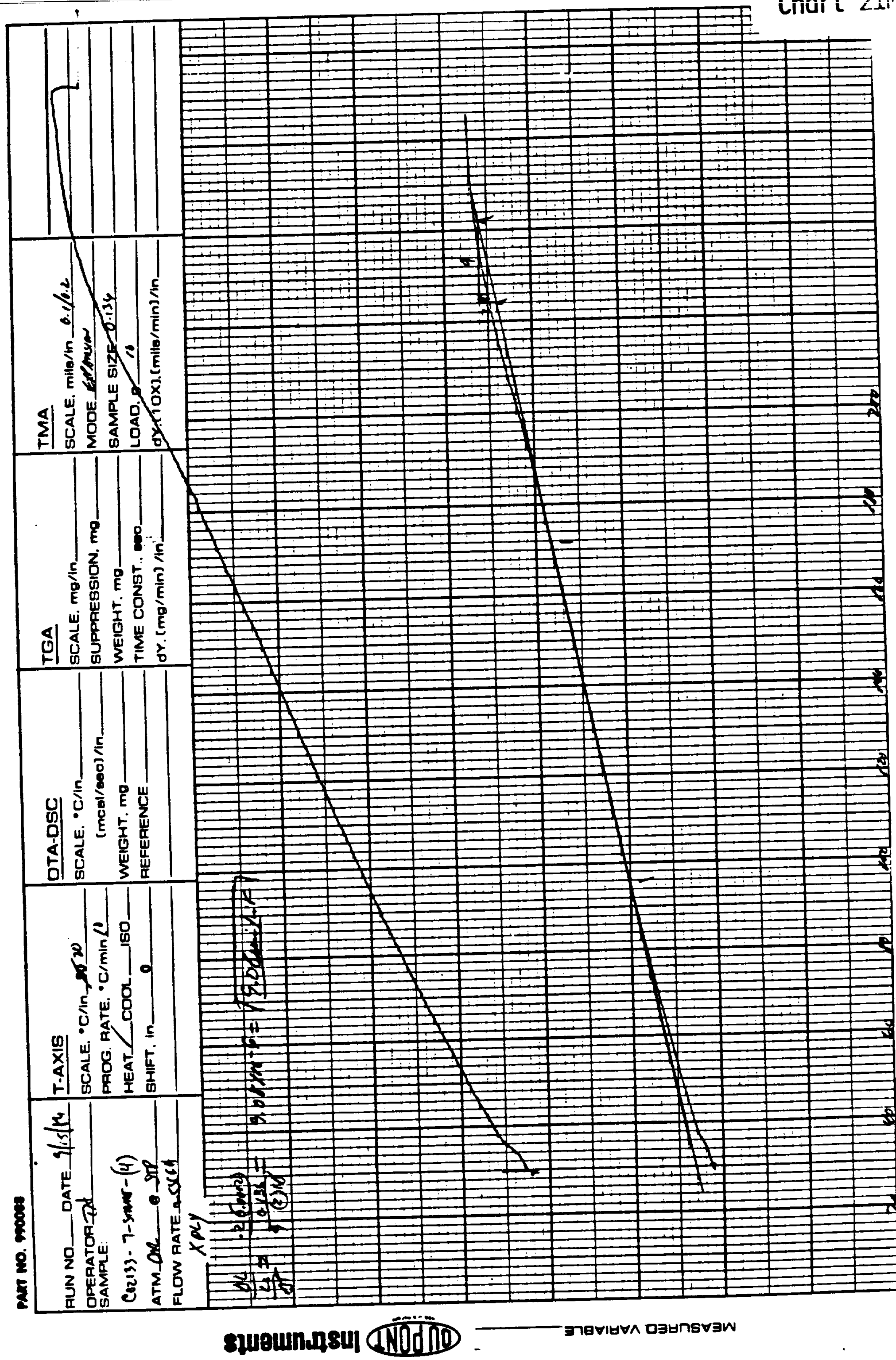

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Chart 21M4

PART NO. 990008

RUN NO ___ DATE 9/3/92
OPERATOR JH
SAMPLE (0113)7-smear-(5)
ATM Air @ 300
FLOW RATE 25SCFH
X PLY

T-AXIS
SCALE, °C/in 100 20
PROG. RATE, °C/min 10
HEAT ✓ COOL 150
SHIFT, in 0

DTA-DSC
SCALE, °C/in
(mcal/sec)/in
WEIGHT, mg
REFERENCE

TGA
SCALE, mg/in
SUPPRESSION, mg
WEIGHT, mg
TIME CONST., sec
dY, [deg/min] /in

TMA
SCALE, mils/in 0.1/2
MODE Expansion
SAMPLE SIZE 0.137
LOAD, g 10
dY, (10X), (mils/min)/in

MEASURED VARIABLE

DUPONT Instruments

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Chart 21N1

Chart 21N2

PART NO: 990088

RUN NO ___ DATE 9/12/96
OPERATOR TH
SAMPLE:
Co2133-7-EP-(2)
ATM Air 0-STP
FLOW RATE 1.5SCFH
w ply

T-AXIS
SCALE, °C/in 50 20
PROG. RATE, °C/min 10
HEAT ✓ COOL ___ ISO ___
SHIFT, in 0

DTA-DSC
SCALE, °C/in ___
(mcal/sec)/in ___
WEIGHT, mg ___
REFERENCE ___

TGA
SCALE, mg/in ___
SUPPRESSION, mg ___
WEIGHT, mg ___
TIME CONST., sec ___
dY/dT (mg/min)/in ___

TMA
SCALE, mils/in 0.4 ✓
MODE Expansion
SAMPLE SIZE 0.259
LOAD, g 10
dY/dT (10X) (mils/min)/in ___

MEASURED VARIABLE

DUPONT instruments

PART NO. 990088

RUN NO ___ DATE 9/1/94 OPERATOR TH SAMPLE: Co433-7-60.(5) ATM Air @ XP FLOW RATE 3.55 ml XPL4	T-AXIS SCALE. °C/in 50/20 PROG. RATE. °C/min 10 HEAT ___ COOL ___ ISO ___ SHIFT. in 0	DTA-DSC SCALE. °C/in ___ (mcal/sec)/in ___ WEIGHT. mg ___ REFERENCE ___	TGA SCALE. mg/in ___ SUPPRESSION. mg ___ WEIGHT. mg ___ TIME CONST., sec ___ dY. (mg/min) /in ___	TMA SCALE. mils/in 0.1/0.2 MODE Expansion SAMPLE SIZE 0.132 LOAD. g 10 dY. (10X). (mils/min) /in ___	

MEASURED VARIABLE ___

DUPONT Instruments